

Full Throttle



Pushing The Envelope Of Flight Simulation!

February/March 1999

Volume 6 Number 1

USA \$7.95

REVIEWS

Comm 1

Red Baron 3D

Total Air War

European Air War

Round Robin:
The Channel Islands

Home Builders' Corner:
Painting the Tiger Moth

Virtual Flight Training:
Flight Planning

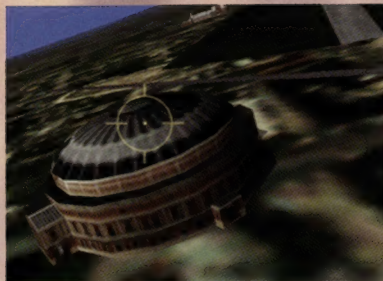


How I Make Scenery:
Coastlines

*Rediscover the romance and nostalgia of
flying perfectly recreated WWII planes.*



THEN BLOW THEM OUT OF THE SKY.



Introducing Microsoft® Combat Flight Simulator.

With the same stunningly realistic flying experience Flight Simulator is known for, only this time it's the 1940's and there's a war on. Join the Allied or Axis forces, choose your fighter, and fly missions in the Battle of Britain and the Battle over Europe.

But don't expect a sight-seeing trip. Sure, the Eiffel Tower, Royal Albert Hall and other historically accurate landmarks are there in heart-stopping 3-D graphics. Unfortunately, with black smoke pouring through the shattered cockpit of your P-47D you won't see much.

And if that isn't thrilling enough, bring in thousands of planes from the Internet and engage in deadly dogfights over scenery imported from Microsoft Flight Simulator.

That's not all. Combat Flight Simulator also supports multiplayer and force feedback technology. So when you pull G's attacking the enemy, and the engine of your Spitfire cuts out, you'll know just how it feels.

After all, nothing beats the feeling of flying a historic WWII fighter. Except, of course, filling it full of lead and watching it plummet pitifully to the ground. Collect your orders and find out how Microsoft Flight Simulator owners can get a \$10 rebate at www.microsoft.com/games/combattfs



Microsoft®

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Full Throttle

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Pilot's Note: This information is not intended for use in actual flying situations. While the information is as realistic as possible, you should not use it for actual flying instruction. *Safe flying!*

Dear Flight SimReader,



As the publisher, I receive hundreds of letters, e-mails, phone calls and other forms of communication about the extraordinary developments in computers, aviation and flight simulation. In fact, I receive so many messages that it's nearly overwhelming. To prevent *information overload*, over the years I've trained my little "peanut brain" to handle the flow.

My first task is to separate the hype from the facts. As I'm wading through the communications, I'm constantly asking myself questions such as these:

- Is this the "greatest" simulator ever written?
- Is that the "best" flight model ever developed?
- Is this the "fastest" 3-D video card available?

When I hear the word "greatest," I translate this to mean "new." Instead of the word "best," I adjust this to mean "new." I also substitute "new" for the word "fastest."

These then become more reasonable messages for me to understand.

My next task is to organize the facts. If the facts tell us that a slew of "new" simulators are coming, we're in a better position to judge the significance of each. Thus, when eight major simulators were released in 1998, we reported that you had a very wide choice at your disposal. When the facts show many "new" aircraft with moving parts are coming, we can report to you that designers have found new ways to innovate. When the facts reveal an obvious pattern about "new" 3-D video cards, we can tell you that 3-D technology is a major force in steering flight simulation developments.

The *Full Throttle* staff follows a similar strategy to separate hype from fact. Furthermore, we want to avoid a trap that often finds its way into many other areas of publishing. It's a trap in which we start making lots of predictions. We shouldn't take our individual opinions too seriously. Rather, we should do an excellent job of sifting through the communications for important facts and trends, doing the follow-up work to get the nitty-gritty details, and then reporting them to you in a fair and open way.

This has been the way our parent company, Abacus, has operated for the past twenty years and will continue to operate in the future. We fancy ourselves to be good reporters, not good futurists.

Happy Flying,

Arnie Lee

A Fact Finding Mission

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Justin Tyme shows how to give your sceneries a "finishing touch" by adding coastlines.

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David Lewis continues his Home Builders' series. We'll be painting the Tiger Moth in this issue.

Working with MS Flight Simulator Textures 37

You can add some variety to the FS world by creating your own scenery textures. Tim Dickens shows how to create custom scenery textures using Paint Shop Pro v.5.1 from Jasc Software.

A Look At DID Total Air War 41

Read why Total Air War (TAW) from Infogrames and DID is by far the best F-22 combat simulation available.

ELITE Electronic IFR Training Environment 47

Jim Rhoads takes a look at the FAA-approved ELITE software training package and avionics panel from Aviation Teachware Technologies.

Full Throttle Looks At Jane's WW II Fighters 53

For some time now Jane's Combat Simulations has been hard at work on a new WW II combat simulation. They set out to create a fun combat simulation that was accessible to everyone, from the basic action game enthusiast looking for an adrenaline fix to the hardcore combat simulation devotee, who lives to fly in a target-rich, authentic combat environment. Jane's WW II Fighters is the result. Read more about it here.

European Air War 58

It may have taken Microprose years to get it together, but European Air War (EAW) is not only a fantastic sequel, it also has what it takes to stand out in a crowded and competitive market, just as PAW (Pacific Air War) did years ago.

Preview of Flight Unlimited III 63

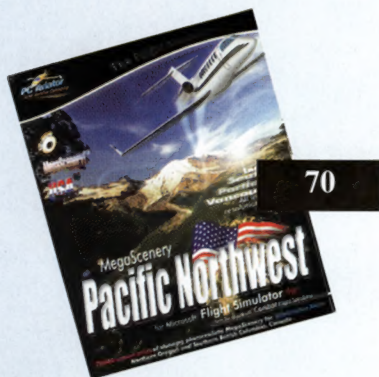
Peter James takes us on a preview of Flight Unlimited III (FU III) — the new version of the popular Flight Unlimited II (FU II).

A Look At Falcon 4.0 65

It's been a very long time in the making — for at least four long years now — but Falcon 4.0 has finally landed on store shelves. Read what Rod White has to say about this new combat flight simulator from Microprose.

Product Reviews 70

In this issue we'll look at MegaScenery Pacific Northwest, RedBaron 3-D, Comm1, The Intensor, Cirrus Yoke and Rudder Pedals



MegaScenery™
Technology

USA 98
MegaScenery™

"Prepare Yourself For The Rush!"

Pacific Northwest



Check It Out With A

Vancouver



**The Largest And
Photorealistic
For Microsoft**

and Microsoft

Imagine powering your Learjet through some of the most photorealistic scenery ever witnessed, within feet of a **REAL Mt Rainier**, exploring the remnants spills of a once angry and very much **REAL Mt St Helen's**, cruising the entire 50 mile expanse of the **REAL Lake Chelan**, and with a bit of luck, returning back to base to tell the tale!

Columbia River



**Available From Retailers
Across North America**

MegaScenery USA 98 Pacific Northwest is the first in a series of the most photorealistic scenery expansions ever created for Microsoft Flight Simulator. **Pacific Northwest USA** has the largest expanse of scenery you will ever see, covering a stunning **70,000 square miles** of the most picturesque landscapes of that region.

Published by

PC Aviator
The Flight Simulation Company

MegaScenery Pacific Northwest

For Microsoft® Flight Simulator 98
and Microsoft® Combat Flight Simulator



Includes

Vancouver
Portland
Seattle

All in rooftop
resolution detail

Microsoft Combat Sim!

Most Advanced
Scenery Ever
Flight Simulator

Combat Simulator

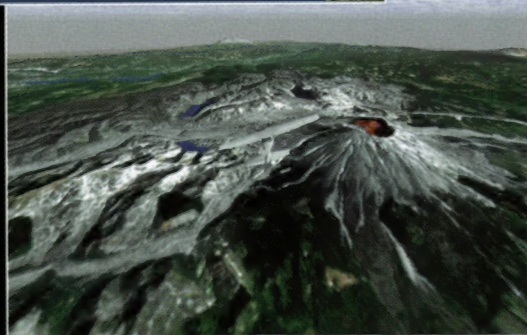
MegaScenery 98 gives you the Flight Simulator world that you've always dreamed about. Not only will you fly cross country, you will also experience a rush of an entirely new dimension, that rush is city flying. Not just one, but three cities, **Seattle, Portland and Vancouver** (Canada). So detailed, that you'll be able to identify almost every individual rooftop in each city.



Seattle

Not only is **MegaScenery Pacific Northwest** the largest and most realistic scenery ever, it also provides you with the most comprehensive complete scenery package ever with 3 full color official NOAA aeronautical charts to navigate your world, 120 instrument approach charts and a 144 page manual.

Mt St Helens



This is no ordinary scenery... this is almost as picture perfect as the world you live in... This is **MegaScenery!**... The most realistic scenery for Microsoft Flight Simulator that you can get! Seeing is believing! This is the new landscape of **Flight Simulation!!**

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In Australia
call 03 9532 8258

Elsewhere
call Intl +61 3 9532 8258

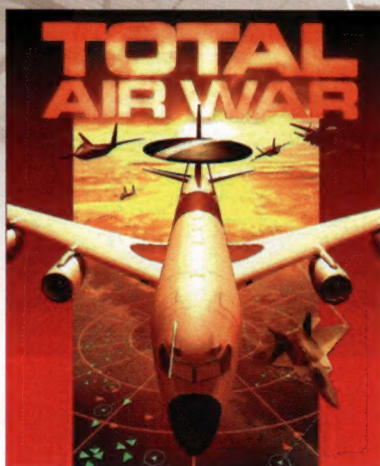
www.pcaviator.com.au

* Works with Microsoft Flight Simulator 95, Flight Simulator 98 and Combat Flight Simulator.

NOTAMS: New Products

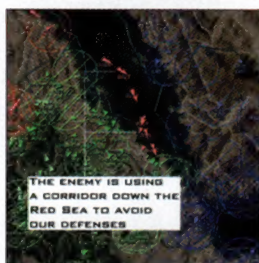
Combat Flight Sim/ Strategy Game

Total Air War (TAW) is a follow-up to last year's "F22 Air Dominance Fighter" and scenarios modeled after Gulf War Air Planner "Five Rings" mission planning system. Players can choose from 10 dynamic campaigns. TAW features more than 22,000 targets, including 5,000 cities and towns and more than 300 airfields, each with correct runways and buildings.



According to DID, experienced simmers and novices alike can enjoy TAW. Novices can involve themselves in short, intense conflicts such as small border disputes. Experienced gamers can try to master a full-scale war between coalition forces.

The campaign changes depending on the actions and reactions of the user. Minor altercations can escalate rapidly and lead to the intervention of the superpowers and total war.



Total Air War

Infogrames Entertainment
333 West Santa Clara St.
Suite 820
San Jose, CA 95113
Phone: (408) 289-1200
Internet: <http://www.did-us.com/>

NOTAM:

Full Throttle also takes a closer look at
Total Air War on page 41.

For those of you who aren't familiar with the term, NOTAMS is an acronym for **NOT**ices to **AirMen**. The U.S. Government issues NOTAMS regularly. This issue of *Full Throttle* includes our version of NOTAMS — an expanded new products section. It's a regular part of our magazine. The products listed are compiled from press releases and information provided by the respective authors and companies who supply the products. We've taken steps to verify the information with each author or company, but cannot be responsible for inaccurate features, specification or availability dates.



MiG Alley

Campaign-based Flight Simulation

MiG Alley is an interactive campaign-based flight simulation. It includes options for instant action in mini campaigns, single historical missions and head-to-head play.



MiG Alley claims to have the first and largest jet-to-jet dogfights. There can be over 50 aircraft in the sky at any time during these dogfights.



MiG Alley contains the following aircraft:

- ✈ F86 Sabre
- ✈ F84 Thunderjet
- ✈ F80 Shooting Star
- ✈ P51 Mustang
- ✈ MiG 15
- ✈ MiG15 bis
- ✈ Other aircraft appearing in the game include the B-29 Super fortress, Meteor, F9 Panther, A1 Skyraider, YAK piston-engined fighter and many others.

According to Empire Interactive, features of MiG Alley include 8-12 players head-to-head network play, over 100 aircraft in the skies at any one time and plenty of radio chatter to confuse and aid the player.

You'll fly the stunning valleys and mountains of the Korean peninsula in the most stunning 3-D landscape ever seen on a home computer. The accurate landscape is based on a range of maps and photos including the era's aerial photography and later, spy satellite imagery. Players can even paint the aircraft and add pilot markings.



MiG Alley

Empire Interactive
580 California Street, 16th floor
San Francisco, CA 94104
Phone: (415) 439-4854
Fax: (415) 439-4928
Internet: <http://www.empire-us.com>

The LEGENDARY AIRCRAFT SUITE **NEW!** FOR MICROSOFT FLIGHT SIMULATOR™
& COMBAT FLIGHT SIMULATOR™

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Automatically generate and edit custom weather using the powerful Applet and Layer Maker. You can fly through custom situations made to your specifications!

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FSCLOUDS & TEXTURES PRO fully integrates with Flight Director 98. It is also 100% compatible with many popular add-ons, including Europe 1 & Europe 2 sceneries!

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FSCLOUDS & TEXTURES PRO includes eighteen selectable cloud styles. From overcast skies, wispy high-level cirrus, to towering thunder-heads, Flight Simulator™ has never been so real. Lightning, complete with thunderclaps, flashes and booms as electricity streaks by!

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Beautiful summer & winter textures, including sandy beaches and realistic water surround you. S.A.M. offers a point-and-click interface to manage your flight, cloud, and weather scenarios. Included preset flight situations get you up and flying in a more real world FAST!

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WORLD COME TO LIFE IN SECONDS!**



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[HTTP://WWW.FLIGHT1.COM](http://www.flight1.com)

FLIGHT1
SOFTWARE

Proflight Series - Vol II "The Next Generation"

Vol II features over twenty new aircraft and panels designed for Microsoft Flight Simulator 98 and will include the Concorde supersonic aircraft. Other aircraft included are the Boeing 757, 777, and the Airbus 320. The aircraft will be available in several domestic and international liveries.

Proflight Series Vol II will also introduce new features in the aircraft panels. Each aircraft will include a fully automated flight director system. Each aircraft panel will also come with an operational FMC (Flight Management Computer) and many other technology enhancements.



The instrument stack from the Boeing 757 even includes details such as the retaining screws.

ProFlight Series Vol II is compatible with flights generated by AETI's, ProFlight 98. In addition, the FMC system will be able to read flight plans generated by ProFlight 98.

**ProFlight
Series-Vol II
"The Next
Generation"**

AETI
3972 Barranca Parkway
Suite J-501
Irvine, CA 92606
Phone : (949) 551-0372
Fax : (949) 551-2695
Internet: <http://simpilot.com>
e-mail: aeti@simpilot.com

Jane's WWII Fighters Arrives

Jane's Combat Simulations has unveiled the long awaited arrival of **WWII Fighters**.

With the recent high interest in World War II simulations, Jane's WWII Fighters is making its mark. WWII Fighters includes a tour of the interactive museum before each flight and a walk around each aircraft as a curator narrates reference from Jane's Information Group Ltd. Video interviews with WWII Aces and news reel footage of combat add an extra historical element to the package.



Aircraft include:

- ✈ P-51D Mustang
- ✈ P-47D Thunderbolt
- ✈ Lockheed P-38J Lightning
- ✈ Focke-Wulf Fw 190A-8
- ✈ Messerschmitt Me 262A-1a
- ✈ Messerschmitt Bf 109G-6
- ✈ Supermarine Spitfire Mk IX

WWII Fighters also includes training missions and multiplayer options. Pilots can choose several options:

- ✈ Quick missions ✈ Single missions
- ✈ Campaigns

You can also use the Mission Builder to create custom mission scenarios.

NOTAM:

Full Throttle also takes a closer look at WW II Fighters on page 53.

**Jane's WWII
Fighters**

Electronic Arts
1450 Fashion Island Blvd.
San Mateo, CA 94404-2064
Internet: <http://www.janes.ea.com>



EFIS98

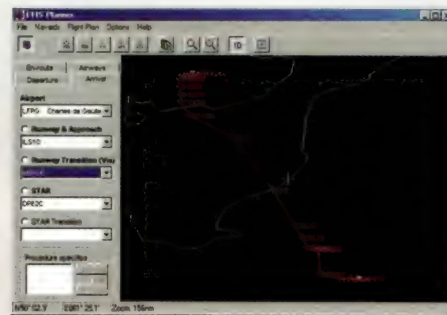
Electronic Flight Instrumentation System

Many modern glass-cockpit jet airliners use the Electronic Flight Instrumentation System (more commonly called EFIS). Now you can, too.

Papa Tango has just released **EFIS98** to the Microsoft Flight Simulator community. Papa Tango claims that EFIS98 was designed with the help of real Airbus pilots and is based around the real flight display systems used by all of the "fly-by-wire" Airbus aircraft.

Features include:

- ✈ Moving map navigation displays
- ✈ Accurate & authentic flight management & guidance Computer
- ✈ Graphical IFR flight planner
- ✈ Navigation data from real-world aviation sources, including over 8300 procedures, 5000 airways, and 36000 fixes.
- ✈ Up-to-the-second navigation & display accuracy, with update rates of one third of a second



Basic setup showing the selected flight routing from London Gatwick airport to Paris Charles de Gaulle.

- ✈ Drag-and-drop resizing for any of the navigation displays.
- ✈ Aural alert sounds, including autopilot & flight plan warnings, altitude callouts during the approach, TCAS sounds and altitude alert sounds.
- ✈ Ability to run EFIS98 on a second computer while running Flight Simulator on another, linked by a null-modem serial cable, allows use of EFIS 98 in such applications as home cockpit projects and maximum realism & size of displays.
- ✈ Plan a flight between any airports in the EFIS 98 database.

EFIS98

Papa Tango
15 Home Farm
Lutton Hoo Estate
Lutton Bedfordshire LU1 3RD
United Kingdom

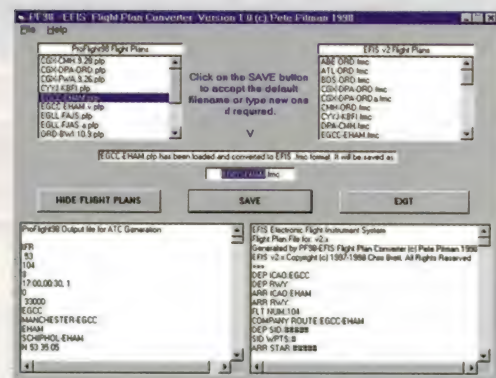
<http://www.papatango.com/>

PF2EFIS2

Proflight98 to EFIS 2 conversion utility

Pete Pitman and Doug Horton have developed a tool that creates new **EFISv2** flight plans from **ProFlight98** flight plans and ATC adventures. It allows simultaneous use of **ProFlight98** ATC adventures and the features of **EFISv2**, including moving map display (CRT) and flight management computer (FMC) with link to FS98 autopilot.

This provides the benefits of using the EFISv2 moving map and FMC displays, which can be used with any installed aircraft, instead of using the ProFlight98 FMC, which can only conveniently be used with the aircraft panels furnished with ProFlight98. Thus, the flight plan can be flown with identical directions (waypoints and altitudes) by the ATC adventure and the EFISv2 FMC and moving map.



PF2EFIS2

Pete Pitman and Doug Horton
Freeware

Internet: <http://www.formulate.clara.net/>

Comm1 Pilot Communications Training

Have you ever wondered how some pilots can communicate and respond so rapidly to ATC instructions? Or have you ever been flying online with your friends and were lost for the correct words and hoping they didn't think Gomer Pyle took your place?

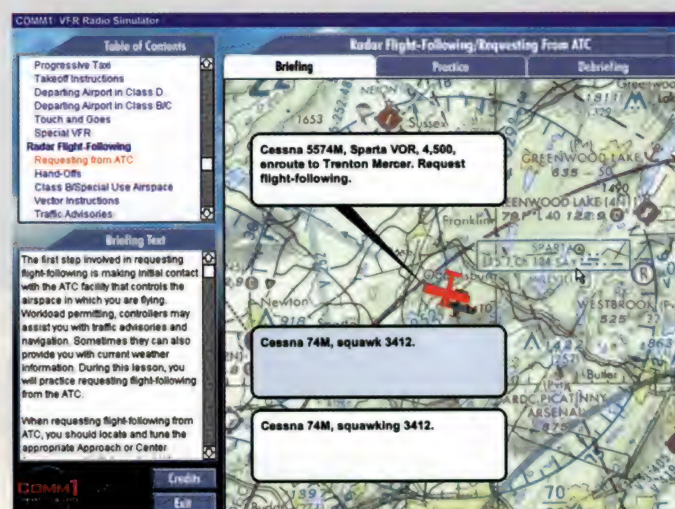
Comm1 will help build your communication skills and have you sounding like a pro.

Comm1 provides you with FAA and Master AIM radio phraseology presented in an interactive environment that is more conducive for learning. Hear "live" air traffic controllers working your aircraft and other traffic in real-time settings through all types of airspace. Detailed graphics depict your aircraft and aid you in each lesson and scenario. **Comm1** allows you to use actual aeronautical charts, airport diagrams and other visual aids in over 70 comprehensive lessons and scenarios through all types of airspace.



Comm1

e-publishing group
113 East Church Street
Frederick, MD 21701
Phone: (888) 333-2855
Fax: (301) 695-5620
Internet: <http://www.e-publishing.com/comm1/frame.htm>
Intro price: \$99.95



NOTAM:

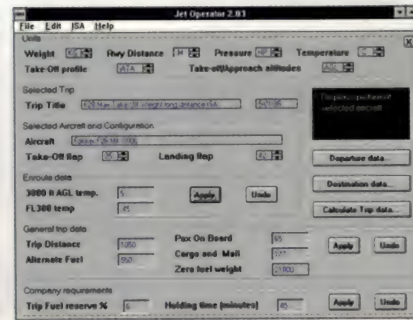
Full Throttle also takes a closer look at
Comm1 on page 77.

Jet Operator 2.03

Jet aircraft flight calculator

Jet Operator enables you to fly aircraft by the book. It calculates real flight data for your trip, from pax, cargo, elevations, temperatures and pressures of departure and destination, trip distance, alternate and more.

Jet Operator also creates a simplified procedure to fly the ship (a systematic guide through the entire flight). Jet Operator takes into account all essential trip parameters like weather, aircraft load and operational limits.



Jet Operator 2.03 shareware includes the Fokker 100 and F28 promotion versions, with the flight performance based on the real aircraft. The Fokkers have an airframe with 3-D tailplanes and the proper wing fairings, 3 section flaps, 3-D speedbrake in the tailcone, ailerons, lights and even moving windshield wipers.

Models also include navigation lights and strobes, taxi, and landing lights outside that turn on depending on speed and engine startup. Flying any plane becomes easier when you have the right speeds and configurations for payload and weather.

Jet Operator 2.03

Flyware
Internet: <http://ourworld.compuserve.com/homepages/gerbrand/jetopeng.htm>
E-mail: 106461.2404@compuserve.com
Shareware: \$32.50

FS Flight Deck

Blue Angels edition

Abacus Software introduces the new **Blue Angels edition of FS Flight Deck**.

FS Flight Deck is an impressive collection of aircraft carrier-based planes spanning more than 50 years. And as a special bonus, designer Paul Hartl has added eight new Blue Angel aircraft, all decked out and ready to fly.

FS Flight Deck contains more than 25 historic aircraft with newly designed panels included, dating from World War II up to and including some of the most awesome machines used today. FS Flight Deck challenges you to learn the special talents of taking off and landing from the flight deck of an aircraft carrier.

Here is the best part, FS Flight Deck is compatible with Microsoft's Combat Flight Simulator. Users can fly all of these carrier-based planes — including the new Blue Angels — with both Flight Simulator and Combat Flight Simulator and be able to land on the four aircraft carriers that are part of the FS Flight Deck package.

FS Flight Deck
Blue Angels
edition

Abacus Software
5370 52nd Street SE
Grand Rapids, MI 49512
Phone: (800) 451-4319
Fax: (616) 698-0325
E-mail: sales@abacuspublisher.com
Internet: <http://www.abacuspublisher.com/>
SRP: \$39.95



Control 2000 Aircraft Manager

Many simmers use **Control 98** to manage their aircraft, panels, textures and sounds. Author Gary Smith has now announced the development of **Control 2000**.



Control 2000 will integrate Microsoft's FS98 and Combat Flight Simulator aircraft, panels, sounds and textures into one platform and allow the sharing of these aspects in either program. Many additional features to be announced.



Control 2000

G.J. Smith

Internet:

<http://www.gjsmith.com/control.htm>

E-mail: control2000@gjsmith.com

Freeware

Dynamic Object Libraries

Users of Abacus Software's FS Action Scenery and Rafael Sanchez's freeware Dynamic Object Designer will be pleased with the release of four new freeware **Dynamic Object Libraries** by Louis Sinclair (author of FS Action Scenery). The four libraries include:

- ✈ Abacus Flight Deck World War II aircraft
- ✈ Abacus Flight Deck Korean War aircraft
- ✈ Abacus Flight Deck Modern aircraft
- ✈ Abacus Library #1



These programs let you animate Flight Simulator sceneries by adding dynamic objects. FS Action! Scenery includes a dozen new objects, but thousands of users are asking for more. If you're a user looking for new dynamic objects to add to your scenery, then visit the Abacus Website and download the new Dynamic Object Libraries.

Dynamic
Object
Libraries

Abacus Software
5370 52nd Street SE
Grand Rapids, MI 49512
Phone: (800) 451-4319
Fax: (616) 698-0325
E-mail: sales@abacuspub.com
Internet: <http://www.abacuspub.com/>
SRP: \$39.95



VIP Classic Wings "The Ultimate Collection"



PC Aviator has announced the release of **VIP Classic Wings 98 "The Ultimate Collection."** It's a collection of over 220 "classic" aircraft for Microsoft Flight Simulator 98.

VIP Classic Wings 98 – "The Ultimate Collection" emerges from the success of VIP Classic Wings 98 - Volume One and Two and provides a collection of aircraft, panels and authentic engine sounds that provide over twice the value of the previous volumes in the series.



Avro Lancaster is only one of the aircraft in "The Ultimate Collection" from PC Aviator.

VIP Classic Wings aircraft come in various paint schemes and liveries of famous airlines.

VIP Classic Wings 98 – "The Ultimate Collection" offers the following aircraft:

- ✈ Airbus A310 (19)
- ✈ Boeing 747-400 (12)
- ✈ Boeing 747-100 to 300 (19)
- ✈ Avro Lancaster (8)
- ✈ Boeing 757 (9)
- ✈ Boeing 767-300-ER (16)
- ✈ Canadair Jet (13)
- ✈ Bombardier Global Express (7)
- ✈ DHC-6 Twin Otter (17)
- ✈ McDonnell Douglas F-4 Phantom (26)

- ✈ Harvard & Wirraway (12)
- ✈ McDonnell Douglas MD-11 (16)
- ✈ Sikorski S-61 & Sea King Helicopters (12)
- ✈ Vickers Viscount (10)

VIP Classic Wings 98 – "The Ultimate Collection" is scheduled to hit retail shelves the first week of December.



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Concorde SST Super Sonic Transport

Interactive Magic unveils the release of author Graham "Dotcom" Waterfield's much-awaited **Concorde SST** package.



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The Concorde SST (Supersonic Transport) stormed the aviation world in 1969, and has thrilled pilots, passengers and the public ever since. An airliner of luxury and class, the Concorde is also the fastest civil aircraft in aviation history—miraculously achieving speeds in excess of Mach 2 (over 1,500 miles per hour).

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Burn holes in the sky as your passengers elegantly dine on caviar and fine French wine. Besides the realistic appearance of the aircraft and its instrument panel, you'll find authentic sound effects, special adventures, and training from a certified Concorde pilot.



Concorde SST features brilliant profiles of the Concorde's gleaming white exteriors (top two images) and full explorations of its intricate instrument panel (below).



Concorde SST

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Virtual Flight Training: Flight Planning

By David Lewis

By now, if you have read the previous issues, you should be capable of finding your way by landmarks, dead reckoning, NDB and VOR. This time we'll complete the set of aids you need to fly in the airways like the big boys. But first, let's look at what happens when you get lost.

Picture yourself at 6,000 feet in thick clouds. You know you are oriented correctly, because your attitude indicator says so, and because the loose change hasn't started falling up out of your pockets. Your airspeed is fine, so you're not about to stall. You've got plenty of time to work out where you are. What do you do?

Hopefully, you have a fair idea of where you might be. If you took off from an airfield in California, you are probably still in California, or Nevada, Arizona or even Oregon. If you're unlucky, you went west, and you're over the Pacific, but we'll ignore that possibility for now.

The first thing to do is dial up a radio aid. In fact, you probably already have one tuned in. Let's say it's the Oakland VOR on 116.8. Next, adjust the OBS knob until the needle lines up in the center. That gives you a bearing to or from Oakland. Look at the flag to see whether it's to or from. Let's say the OBS is set to 347 degrees. So you know you are somewhere North of Oakland and within about 40 miles (or you would not receive a signal from the VOR).

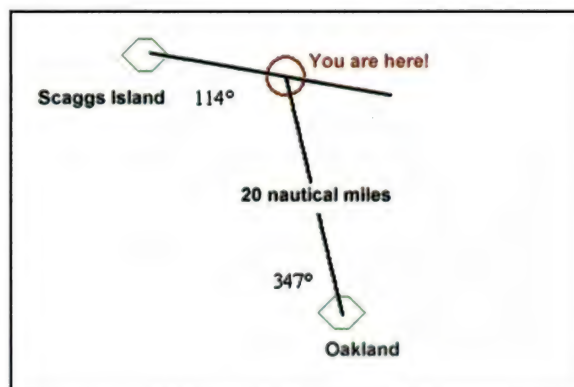


Note the To/From flag.

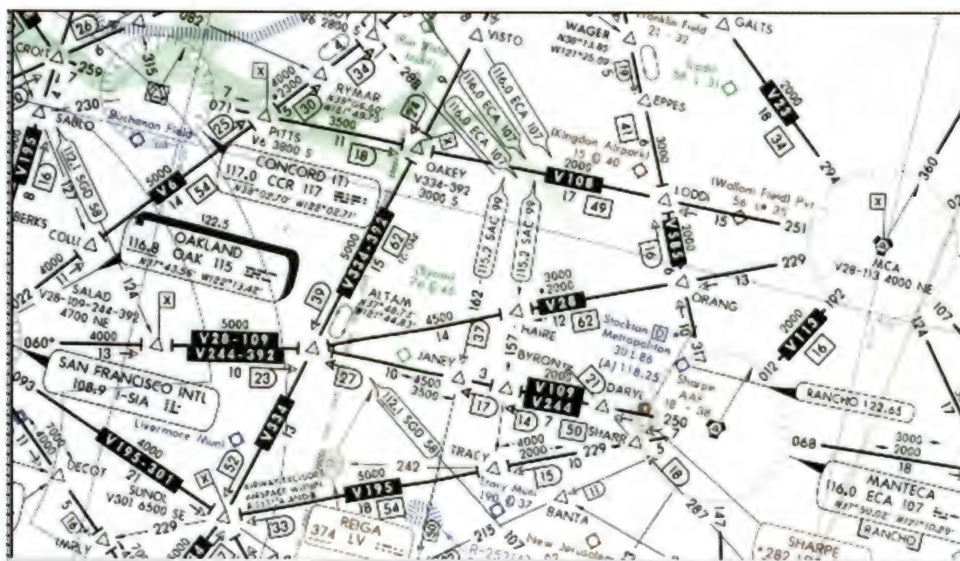
“Virtual Flight Training” looks at the development of navigation and flight planning, from the earliest days of biplanes with road maps in the cockpit to the latest jet airways. Along the way will be detours into various aspects of aviation, including charts, weather and controlled airspace, and exercises for you to practice on your simulator. My goal is for you to find your way safely from point A to point B in the simulated world.

The next step depends on the equipment you have in the cockpit and what kind of aid you tuned in. Oakland has a DME, so you can read the distance off it. Since only one place in the world is 20 nautical miles from Oakland VOR on a bearing of 347 degrees magnetic, you are not lost any more. You can put a ruler and protractor on your flight chart and mark your position.

Let's pretend Oakland didn't have DME. Not all VORs have DME, and very few NDBs do. Now the only way to fix your position along that line running north from Oakland is to get a second bearing from another beacon nearby. So tune in Scaggs Island VOR on 112.1 on the other NAV radio, and adjust the OBS knob for another bearing. This time it's 114 degrees from Scaggs to you. So, lay your ruler on the chart, draw a line from each VOR, and where they cross is your current position.



Virtual Flight Training: Flight Planning



The section of the Oakland area airway chart for this issue of *Virtual FLight Training*. It shows the VOR and DME information you'll need to find your location.

All this discussion is not just preparation for getting lost in the future. So far, all our radio aid flights have been point-to-point, either straight to a beacon or straight from one. The airways mostly do the same thing, but some of them cross, and you may want to turn off from one airway to another at the intersection. The mystery place in our example is overhead the town of Crockett, by the toll bridge to Vallejo on Interstate 80. It is also an intersection between airway V108 from Linden to Santa Rosa and V150 to Sacramento. The name of the intersection is "CROIT." Finding these intersections is an essential part of airway navigation.

The other new instrument for this flight is the *ILS*. Instrument Landing System (ILS) is a natural extension of the VOR/OBI equipment for precision approaches. Instead of a VOR, the airport has a "localiser," which works the same way, but is more precise and has a fixed radial. With a VOR, the CDI needle swings one dot for every two degrees of drift off the radial. With a localiser tuned in, the same amount of needle movement indicates only half a degree off course, and the full swing from the center to one side only represents two and a half degrees of deviation.

The localiser does not use the OBS, but it is good practice to set the OBS to the runway heading anyway, as a reminder of the inbound heading. If you leave some other bearing showing on the OBS, you could easily become confused.

The other feature of the ILS is a glideslope transmitter. This beams a signal along the ideal descent profile, usually at an angle of 3° above ground level. The receiver is linked to a horizontal needle on the OBI 1 display. The easiest way to think of the glideslope is like a localiser laid on its side. When you are too high, the needle drops. When you are too low, the needle rises. You should try to keep the needle level, just as you keep the localiser needle centred.



Fly Right



Fly Down



Fly Left & Up



Perfect

Just like the VOR and Course Deviation Indicator (CDI), you simply correct toward the needle. Beware of getting below the glideslope, though, as there may be a tall building waiting to clip your wings!

The ILS lets you fly safely toward an airport you may not be able to see. In low cloud or fog, you can fly down the ILS glideslope knowing that you will not hit a hill or an office building. But only the most sophisticated airliners are equipped to fly right onto the ground without the pilot being able to see the airport. Everyone else must expect to see the runway before they land on it. So how low is it safe to go?

The answer to that question depends on many factors: your experience at this kind of flying, the instruments you are using, the direction of approach (and how near the approach passes to an obstruction, not to mention how tall that obstruction is). I have an aerial guide from British Airways, which lists a recommended minimum for each airport it describes, depending on the runway in use and the instruments being used.



Before you fly an instrument approach, you should decide how low you could go without seeing the runway. That's your decision height, because when you get there you have a look and decide whether you can see to land. If you can't see, give up, climb away, and go somewhere else where the weather is better. The surest way to crash is to "just go a bit lower to see if it gets any better."

Flight No. 7: Concord Buchanan Field to Stockton Metropolitan

Take a look at the Oakland Area Airway Chart. The route is north from Buchanan to Concord VOR, then east along airway V108 past PITTS intersection and then OAKEY to LODDI intersection. At LODDI turn south onto V585 as far as ORANG intersection, then direct to Stockton Metropolitan. Total flight distance is about 50 nautical miles. That's the summary, here's the step-by-step version.

Start the simulator, and select Buchanan Field at Concord in the San Francisco area. You'll be positioned on runway 1R. Fly the Cessna, and choose any weather conditions you like. Before take-off, tune in Concord VOR on NAV2. The frequency is 117.00, and you can also set the OBS to center the needle. Take off and turn onto heading 350°, and follow the CDI to the VOR. Aim to climb out to 5,000' by the time you reach Concord VOR. The floor altitude on V108 is 3,500' (it's printed above the airway between PITTS & OAKEY), but eastbound instrument flight should be at an odd thousand feet, so 5000' is the minimum for this trip. If you don't make it, circle and climb at the VOR before continuing.



In takeoff position, Buchanan Field 1R

Remember that once the DME reads two nautical miles to go, you are too near for the CDI to be any use. Even a small deviation (in yards) will look big on the needle. So at two miles to go, if you've not reached 3,500', turn 180 degrees and go away from the

Airways

An airway is like a highway in the sky. It is defined by two end-points (usually radio navigation aids), and is usually eight nautical miles wide (four nm to either side of the centreline). Occasionally airways are wider, whenever the gap between a pair of radio aids on the route is more than 102 miles.

Within an airway, instrument flying rules apply. To fly in the airway, the plane must be suitably equipped with nav aids and radio, and the pilot qualified to use them. Air Traffic Control constantly monitors airways and gives instructions to pilots to separate them from other aircraft. They may ask an aircraft to speed up, slow down, climb or descend to avoid coming too near another plane. You should enter and leave airways at recognised intersections and only with clearance from ATC.

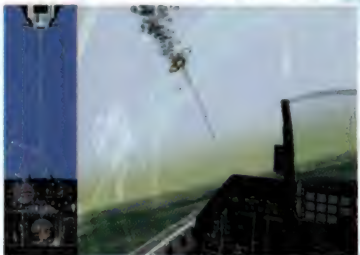
The other thing you need to know about airways is that they have a floor and a ceiling. Below the "floor" you aren't in the airway, you're underneath it. That's useful for regular VFR pilots, because it avoids the need to enter the controlled airspace of the airway. Usually the ceiling is so high (24,500') that VFR traffic doesn't go up there. Above 24,500' is a second set of "upper" airways, chiefly for jet aircraft.

VOR. Keep going away for one full minute, then turn through another 180 degrees and fly toward the VOR. Do this as often as you need.

When you get within two miles of the VOR at the right altitude, turn onto heading 071°. Adjust the OBS to the same bearing, so you can follow the CDI needle. Now you can take it easy for a while. Call out the intersections as you pass PITTS (at seven DME) and OAKEY (at 18 DME). The intersections are probably named after Pittsburgh and Oakley, roughly the nearest habitations below them. Similarly LODDI is near Lodi, but I don't understand the origins of ORANG intersection, even though I tried very hard to find UTANG on my chart.

Notice that the floor of the airway drops to 2000' after OAKEY, so you could choose to circle at OAKEY and descend to 3,000'. It's up to you. The floor was higher for the earlier part to be sure of clearing some obstacle within the airway (five miles to either side) by a safe margin—presumably it's the foothills of Mount Diablo in the Centra Costa.

Technically, it's still a computer game.



It's the simulator of unparalleled realism, graphics, and intensity. You can control everything in the F-16. Every button, every switch, every aspect of flying the real thing. Falcon 4.0 simulates the most realistic flight model, avionics, and weapons systems available in any flight sim. Plus Tactical Engagement, the most extensive training system and mission builder ever made, featuring 30 training missions designed by F-16 pilots. And if that seems a little overwhelming, you can play in Instant Action mode, featuring a simplified flight model with unlimited ammo, fuel and enemies.

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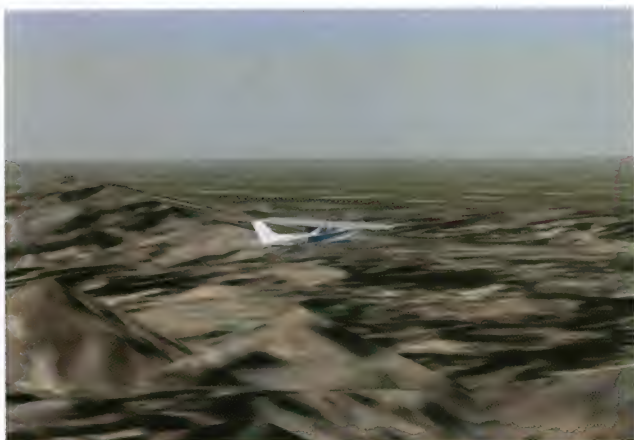
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Virtual Flight Training: Flight Planning



Watch your altitude around the canyon!

Past OAKKEY tune in Linden VOR on NAV1, frequency 114.80. Adjust the OBS to show 071. The usual practice is to track away from one VOR (Concord) until halfway to the next one (Linden), then start tracking towards the destination. The nearer VOR will always give the more accurate course information.

You can fix your position at LODDI in a number of ways. You could use the DME on NAV1, which will read 15 at LODDI, or possibly DME on NAV2, which will read 35. More of a challenge would be to re-tune NAV2 to Manteca VOR on 116.0 as soon as you pass OAKKEY. Set the OBS to 137, and keep an eye on the CDI needle. At OAKKEY the needle will be way over to the right, but it will slowly swing across. The needle will center as you cross LODDI intersection.

When you know you're at LODDI, turn onto a heading of 137°. You should have already set this up on NAV2, so simply follow it south to ORANG. On the way, re-tune NAV1 to 109.1, the ILS frequency for Stockton Metro runway 29R. You may have wondered why I started by asking you to set NAV2 for Concord VOR, rather than NAV1. The whole point was so that you always alternate frequency changes, and are never without a Nav radio tuned in to a

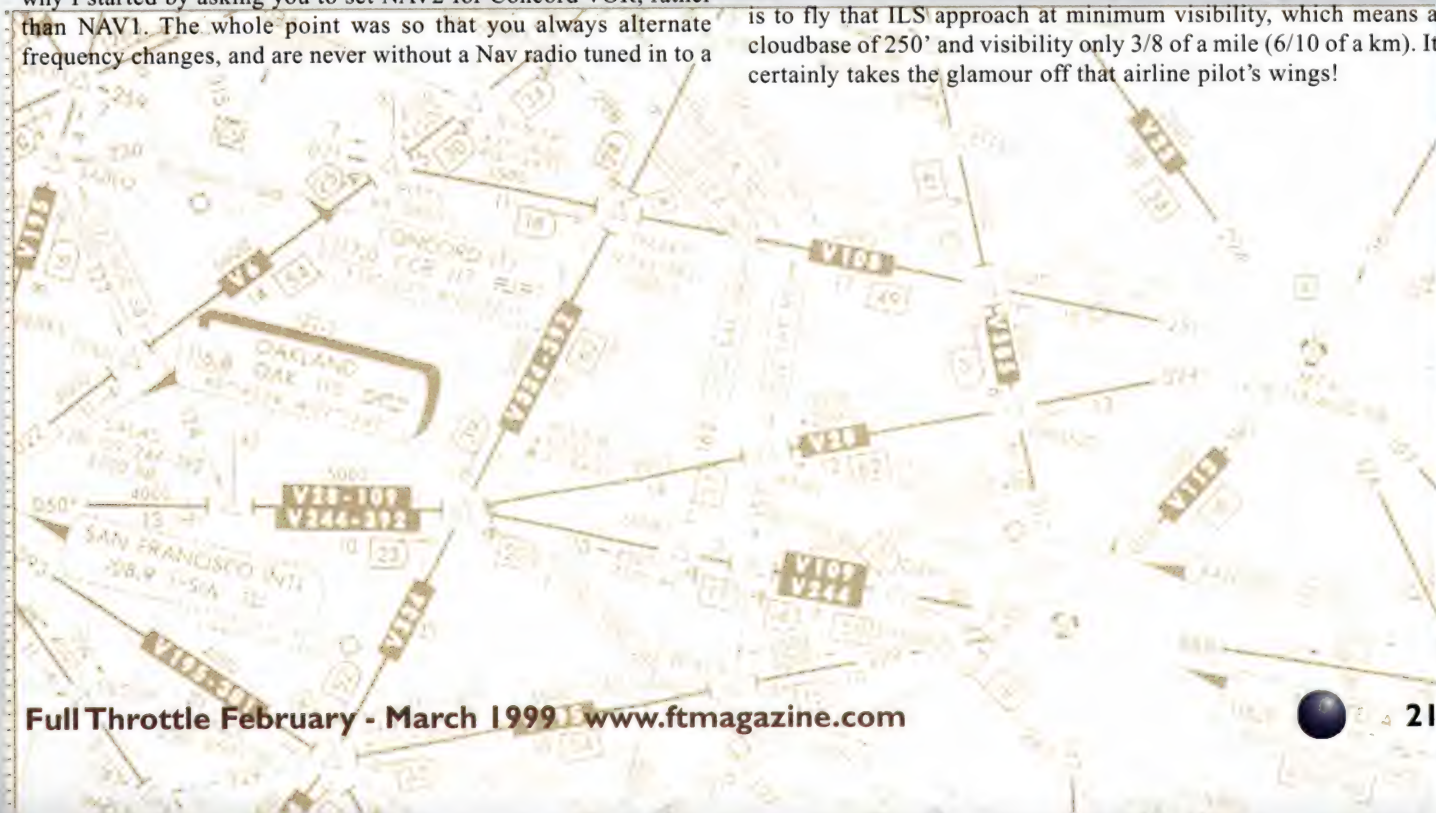
nearby beacon, and you finish with NAV1 because it's the only one that can show the glide slope for an ILS approach. It just shows how a minute's thought in flight planning can reduce the workload during the flight.

At 10 miles out from Manteca you've reached ORANG, and can leave the airway to arrive at Stockton Metropolitan. If you haven't begun your descent yet, I advise circling at ORANG until you get down to 2000' to drop out of the airway. Then fly on a heading of 155° until you see the NAV1 localiser needle start to swing. As soon as it does, turn onto 290°, keeping the needle centered. You should be nicely positioned for a straight-in approach to runway 29R. The runway altitude is just 30' AMSL, and you can follow the glideslope for a smooth and accurate descent. I recommend a decision height no lower than 200' AGL (230' AMSL). Happy Landings!



Final Approach-Stockton Metropolitan Airport

Once you've come this far, perhaps you'd like to try the return trip? I'll let you handle the planning for it. Another great challenge is to fly that ILS approach at minimum visibility, which means a cloudbase of 250' and visibility only 3/8 of a mile (6/10 of a km). It certainly takes the glamour off that airline pilot's wings!





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Round Robin Adventure #5

By Al Pelletier

Welcome to the fifth Round Robin (RR) written for *Full Throttle* magazine. This RR takes place in the south of England and the Channel Islands. It is an over water flight with navigation by NDB for the first two legs, tracking a VOR for the third leg and a short VFR final leg to intercept an ILS. You could call this a fairly easy route, but try adding some weather, at your discretion, to have more of a challenge. Pilot training around the Channel Islands is also very interesting, so give some circuits a try!

We will begin at Bournemouth Int'l in the south of England, just west of the Isle of Wight. We'll fly the first and second legs to the islands of Guernsey and Jersey, located in the English Channel southwest of Cherbourg, France. Our third leg will bring us back to England and the Southampton Int'l airport, before returning to our departure airport in Bournemouth.

The Round Robins use real-world navigation

This RR was flown using Microsoft's default FS98 scenery. It can also be flown with any simulators that have the required nav aids and airports. I flew a Shorts 360 on this trip, which is best suited for twin prop or twin turbo. A Cessna 421, 414 or a similar twin prop aircraft may also be used.

If you flew previous RRs, skip the next paragraph, jump right in, and have fun. For those who are new to this, Round Robins are for flight simmers to look at the scenery, refresh

geographical knowledge, practice cross-country navigation, rehearse approaches at different airports all over the world, and have FUN.

With information such as airport departure and runway number, VORs and ADFs enroute, you will fly to two or three airports with VFR or INST approach and return to your point of departure. You will also be given ILS and LOM frequencies, minimums, procedures, etc. and a little background on the geography of the area. After you do a few of these, you will have a much better understanding of the different types of published procedures. You will learn to handle a lot of information in a very short time, while still maintaining control of your aircraft.

I also suggest that you read the entire route a couple times before starting out, so that you'll have the flight plan clear in your mind.

Scenery Required

You'll need the Microsoft FS 98 default scenery and the booster files for Europe active. You'll also need

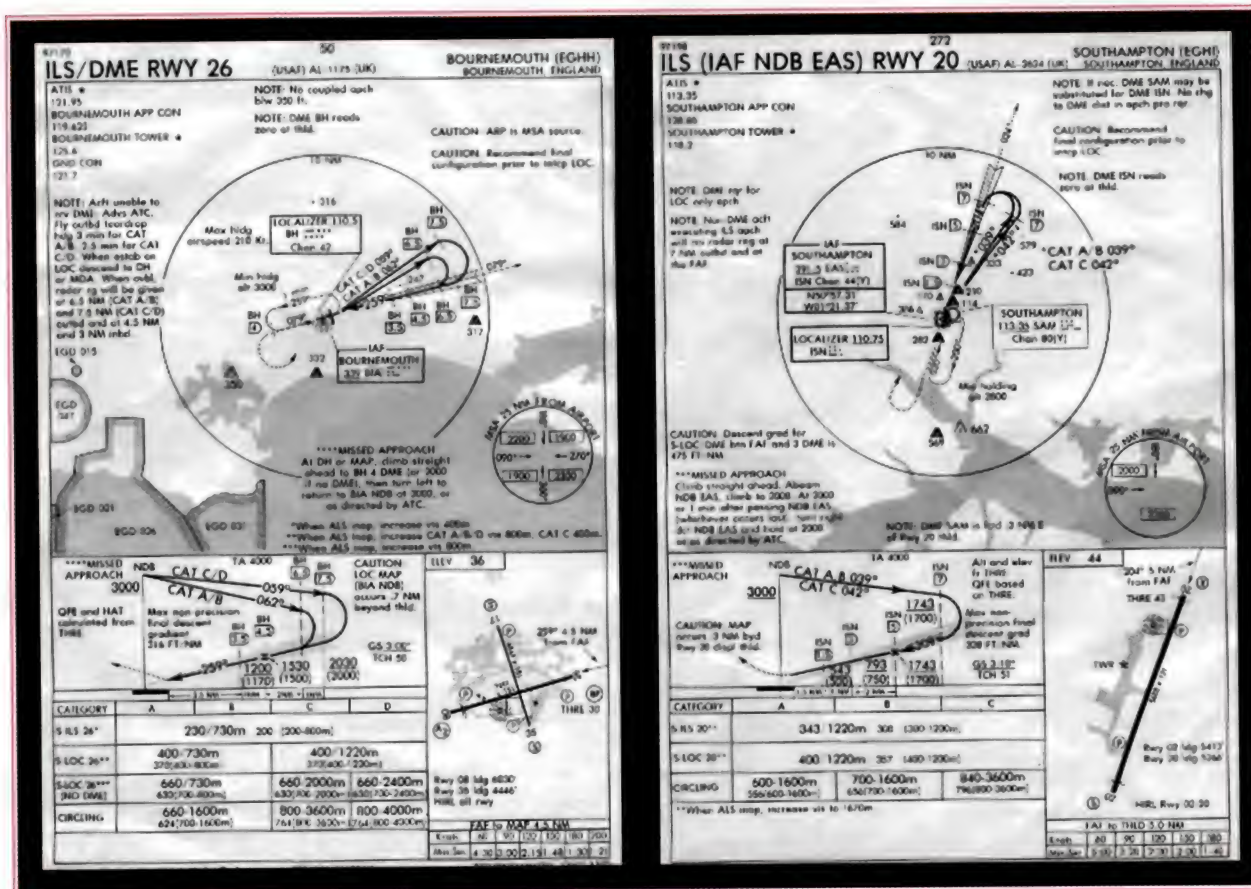
add-on sceneries ENGLAND.ZIP, ENGL-T2.ZIP, EGHH_EXT.ZIP, CHANNEL.ZIP and SOTON.ZIP (and also ENGLAID2.ZIP for FS6 users only). These files are available individually or zipped together at <http://wings.ark.com/files.html>, where all the files for *Full Throttle's* RRs are kept.

The file you want is FTCHANNEL.ZIP. This contains all files zipped together, ready for you to install.

NOTE: To properly display this scenery, set your scenery complexity to "Dense."

I used older scenery because of its simplicity of installation and its compatibility with most versions of Flight Simulator. However, some great, newer scenery is available from the UK design team, located at <http://www.magrathea.clara.net/>. There is a bit of work to install it all, but you will find it well worth the effort, as these designers have done some tremendous work.

An English Channel Round Robin Adventure



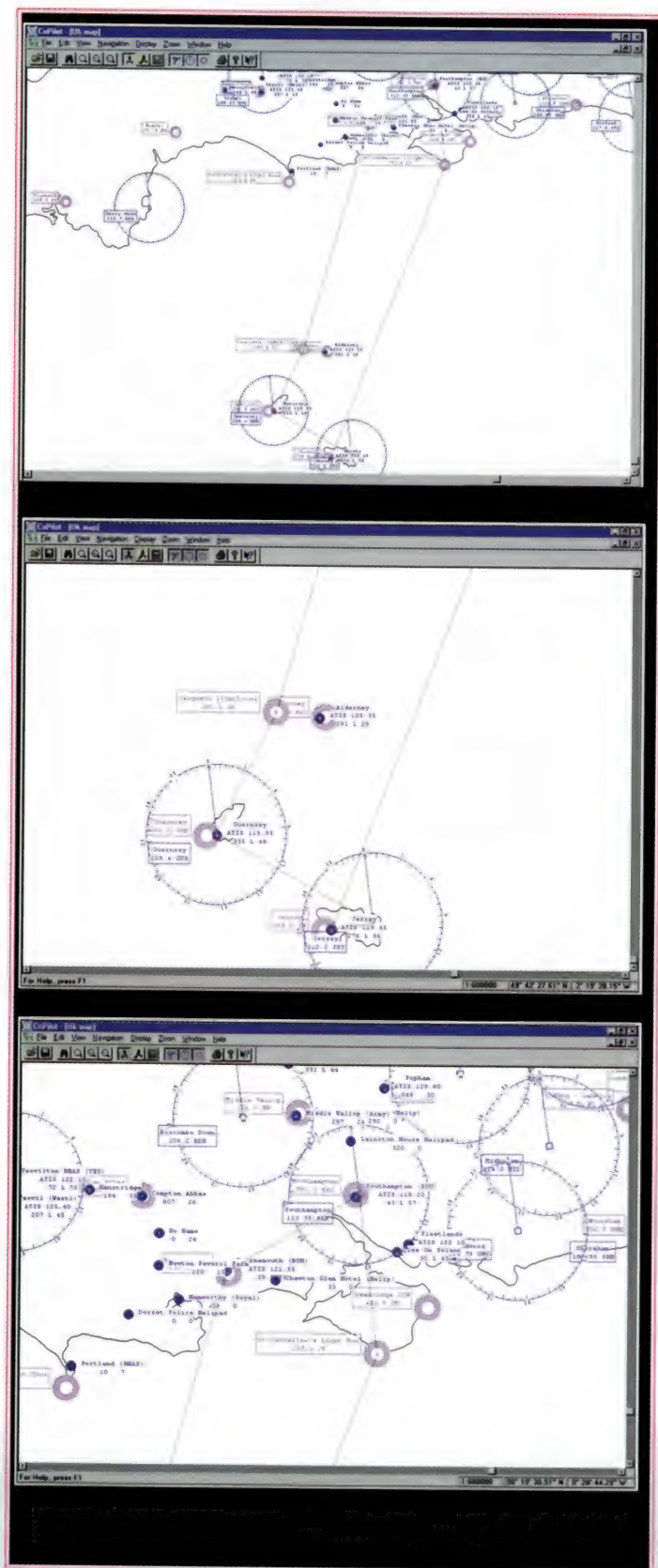
Geography

The popular, year-round resort of Bournemouth, on the English Channel, has a mild climate, which contributes to it being a major retirement and convention center. The seaside resort community, set in valleys sheltered by cliffs, is noted for its fine sandy beach and numerous parks.

Southampton, near the head of Southampton Water (an inlet of the English Channel), is the major trading center and seaport on the southern coast of England. Southampton was also the homeport for many trans-Atlantic ocean-liners in the days before jet travel.

The group of small islands known as the Channel Islands is a dependency of the British crown and lies in the English Channel off the French coast of Normandy. The temperate climate and picturesque scenery attract many tourists, who play an important role in the economy of the islands.

An English Channel Round Robin Adventure



First Leg

From: Bournemouth (EGHH)

To: Guernsey (EGJB)

Distance: 111 nm

- ✈ Set FS's clock to 07:00 (in the **World | Time & Season** menu). Weather should be unlimited ceiling and visibility.
 - ✈ In the Go To Airport dialog box, select runway (RWY) 26 at Bournemouth under English and Welsh Airfields Scenery.
 - ✈ Set the GUERNSEY (GRB) NDB 361.0 and dial in the GUERNSEY (GUR) VOR 109.4 on NAV2.
 - ✈ Take off (T/O) RWY 26 and make a left climbing turn to 7,000' on heading (HDG) 210°.
 - ✈ Begin tracking the GUR VOR upon reception, which should be a few minutes after T/O.
 - ✈ 30nm out of the GUR VOR, descend to 2,500' and home the GRB NDB in preparation for an NDB approach to RWY 09 (actual course 093°, RWY length 4,800', elev. 336').
- NOTE:** Make certain that your scenery complexity is set to "Dense."
- ✈ Watch for the island of Alderney to pass on your left.
 - ✈ 7nm out, descend to 1,800' and continue homing the NDB.



This is the landing at Guernsey.

An English Channel Round Robin Adventure

- ✈ Over the NDB, turn right onto HDG 250° and maintain 1,800'. Hold the heading for two minutes, then turn right and home the NDB to overfly on a HDG of 093°.
- ✈ 5nm out you are cleared to land on RWY 09 (actual course 093°, elevation 336', RWY length 4,755'). Be sure your gear is down.

LAND Guernsey.

Second Leg

From: Guernsey (EGJB)

To: Jersey (EGJJ)

Distance: 6 nm

- ✈ Set the FS clock to 08:30.
- ✈ Dial in the JERSEY (JW) NDB 329.0.
- ✈ Taxi to and T/O RWY 09, make a right climbing turn to 2,000' and home the JW NDB.
- ✈ After the island of Sark passes on your left, you should be getting a visual on the airfield on Jersey.
- ✈ Maintain course and overfly the airfield, and after one minute begin a right turn to come around to HDG 087° for a visual approach into RWY 09.
- ✈ 5nm out you are cleared to land on RWY 09 (actual course 087°, elevation 277', RWY length 5,545'). Check to insure your gear is down.

LAND Jersey.

Third Leg

From: Jersey (EGJJ)

To: Southampton (EGHI)

Distance: 112 nm

- ✈ Set FS's clock to 09:30.
- ✈ Dial in the Southampton (SAM) VOR 113.35 on NAV2.
- ✈ Taxi to and T/O RWY 09, and make a left climbing turn to 13,000', HDG 020°.
- ✈ Track the SAM VOR when it kicks in, about 75nm out from EGHI.



- ✈ 30nm out begin descending to 4,000'.
- ✈ Dial in the ISN LOC frequency 110.75 in preparation for an ILS to RWY 20 (actual course 204°, elevation 44', RWY length 5,600').
- ✈ 10nm out, descend to 3,000', reduce to approach speed and continue tracking the VOR to on top.
- ✈ On top of the SAM VOR, turn right to HDG 042° and continue descending to 1,800'.
- ✈ 5nm out from the VOR, turn left to HDG 204° to intercept the LOC.
- ✈ Continue with approach.
- ✈ 5nm out you are cleared to land on RWY 20 (actual course 204°, elevation 44', RWY length 5,266'). Check that your gear is down.

LAND Southampton.

Fourth Leg

From: Southampton (EGHI)

To: Bournemouth (EGHH)

Distance: 22 nm

- ✈ Set FS's clock to 12:00 (noon).

An English Channel Round Robin Adventure

- ✈ Dial in the LOC BH frequency 110.5, in preparation for an ILS to RWY 26 (actual course 259°, elevation 36', RWY length 7,450').
- ✈ Taxi to and T/O RWY 20, making a left climbing turn to 5,000' on HDG 200° to intercept the ILS.
- ✈ On intercepting the ILS at approx. 5,000', turn right onto HDG 259° and follow the ILS into EGGH.
- ✈ 5nm out you are cleared to land on RWY 26 (actual course 259°, elevation 36', RWY length 6,030'). Be sure your gear is down.
- ✈ Land at Bournemouth.

Many thanks to Eric Randle of Comox, BC, who helped in writing this adventure, and to our many scenery designers who make this all possible.

Visit Al Pelletier and his crew at:

apeltier@mars.ark.com

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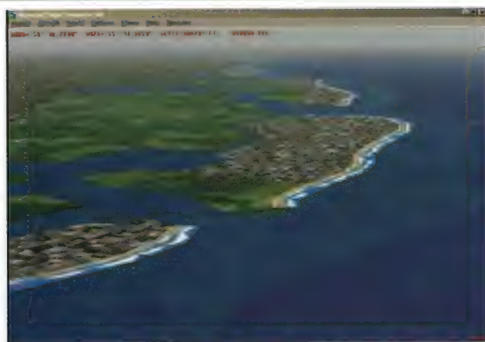
How I Make Scenery

Part VI: Natural Geographic Features III—Coastlines

By Justin Tyme

Justin Tyme continues his series on scenery design. In this issue, Justin will show how you can finish your scenery by enhancing the coastlines. He'll discuss how to do this using Airport & Scenery Designer from Abacus and Luis Vieira de Sa's freeware program called Beaches.

If you want to give your sceneries a "finishing touch," enhance those coastlines! In this article we will discuss how to do this using Abacus's **Airport & Scenery Designer** and Luis Vieira de Sa's freeware program called **Beaches**.



Without further ado, let's jump right in...

Download and Install Beaches

First, if you haven't already done so, you'll need to download and install Luis's Beaches program. The best and easiest place to get it is at Luis Vieira de Sa's Website, at <http://www.it.uc.pt/~luis/fltsim.html>. It's also available at <http://www.flightsim.com> and all the various mirrors of <ftp://ftp.iup.edu>. The program is a little over one MB and comes with its own setup program. Installation is easy.

Beaches is a post-processor, meaning that it takes the SCASM source file output of ASD and further processes this source file before the final compilation into the .BGL files. This means that enhancing your beaches should take place after you've made your final edits to the ASD .SCB file and before you gather your distribution files. You can experiment with Beaches before actually finalizing your distribution files, but every time you recompile your files from ASD, you will overwrite the changes Beaches makes and will have to process your coasts again. That's why it's best to save the Beaches processing for last.

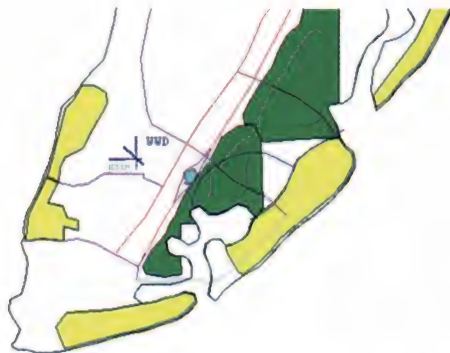
So, saving Beaches for last, let's discover what to do first.

Preparation in Airport & Scenery Designer

At some point in the design process you will use ASD's Coast Tool, if you are designing a scenery area that has a coastline. In order for Beaches to process your source file properly, you must choose the Beach option for the coast polygons you want to enhance. Keep in mind that all coasts don't necessarily have a beach, so the realistic scenery designer should consult a reference source in order to determine what coastal areas should have a beach added. This applies as well to any inlets, bays or estuaries. In most cases, only that portion of your coastline that is actually facing an ocean or other large body of water will really have a beach. Of course, there are always exceptions, so to be safe—and realistic—consult a suitable reference source.

Scenery Design Corner

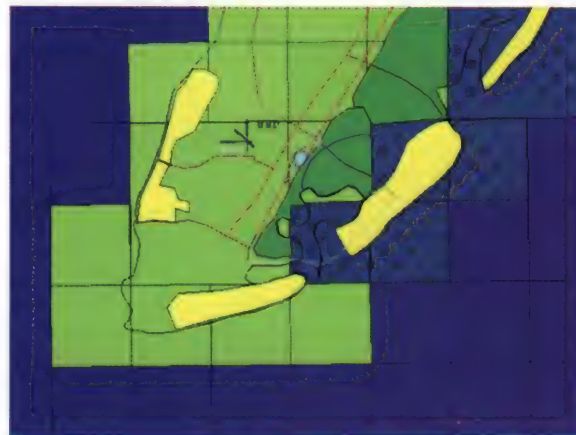
OK, let's open ASD, find a coastal area and apply some coast polygons. The example area I've chosen is the southern tip of New Jersey from my PANJ98 scenery.



First stop should be the Global Preferences, so let's pull down the **File** menu of ASD and choose **Preferences**. Now click the **Regions** tab and choose "Coast." Click the **Style** tab and set 250 meters as the maximum width. (You may want to experiment with this parameter to determine the look you want for your final, processed beaches.) Also, put a checkmark beside "Beach." Click [OK] to return to your map.

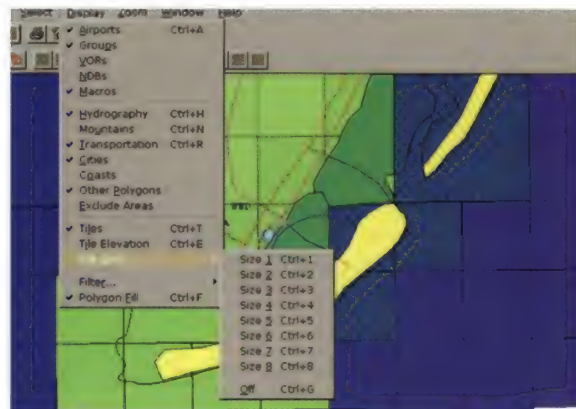


Before we begin to apply the coast polygons, let's look at the synthetic tile situation. Pull down the **Display** menu and choose **Tiles**. By now you should have already filled in your appropriate terrain and water tiles on both sides of the boundary. Obviously, the water side of the boundary will have water tiles and the land side of the boundary will have some type of terrain tile. Since a coastline will rarely, if ever, coincide exactly with the edge of a tile, you should take care to ensure that the land side of the boundary is completely filled. You do not want to have an unrealistic chunk of a corner or edge of a water tile intruding into the land side. Conversely, you *will* have parts of terrain tiles extending out into the water areas. Fixing this is the very purpose of coastal polygons.

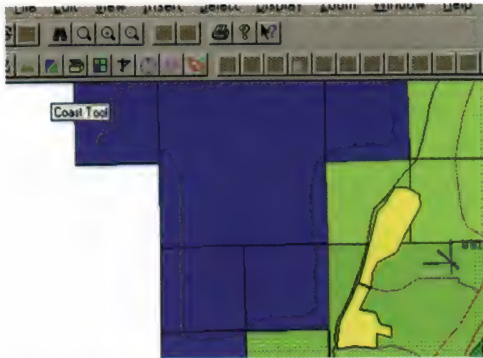


Here is a tip to give an extra little bit of realism. I took the default water texture and lightened it just a bit, creating a texture called WATERLT.R8. I made this the default texture for my coast polygons. This will simulate the appearance of shallower water near the coast. I will show you how to edit these a bit later on. But to pull this off, we need to ensure that the parts of terrain tiles extending out into the water are as small as possible, so for tiles on both sides of the boundary, you probably want to use size six.

Depending on the irregularity of your coastal area, you should choose the appropriate size for your coastal polygons. You should keep your polygons under 100 points if possible. A large polygon applied to a highly irregular coastal boundary will result in more than 100 points, so ASD offers a wide choice in polygon sizes, based on, but having nothing to do with, synthetic tiles. Pull down the **Display** menu and choose **Tile Grid**. A popup menu will reveal choices from size one to size eight. In general, use the largest size you can get away with while keeping the number of points in each individual polygon in mind. If your coast is fairly straight and regular, you can probably get away with a size five. More irregular coasts will require you to use smaller polygons.



After choosing the appropriate tile grid size, click on the Coast Tool. Your cursor will change to a small square diagonally colored black and white. Now, left-clicking on the water side of the boundary, lay in your coastal polygons, covering any portion of terrain tiles that may be protruding into the water.



Now, here's how to edit the polygon to give the appearance of shallower water near the shore. Right-click on the individual polygons, insert handles as necessary and edit to eliminate the squared edge facing the deeper waters. Since the coast polygons have a slightly lighter shade of blue than the default water tiles, you will create an illusion of shallower water near the shore. Do this the entire length of your coastline.



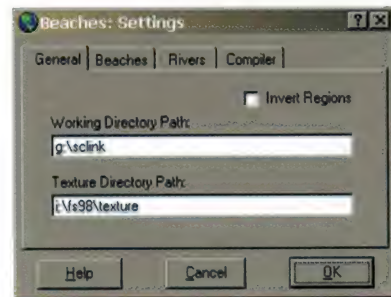
As stated earlier, in most cases inlets and bays do not have beaches, so for these coast polygons you'll want to remove the "beach" parameter. Now, let's compile and run it through the Beaches program to see what we have.

Using Beaches

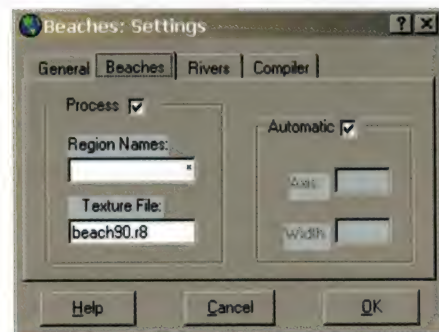
First, we need to tell Beaches the proper settings for your configuration. Open Beaches and click the *Settings* tab. If you get a "Beaches Run-time Error 31037," you'll need to go to Luis's Website (<http://www.it.uc.pt/~luis/files/Tabctl32.zip>) and get the proper version of TABCTL32.OCX. After backing up your existing TABCTL32.OCX file, unzip this file to your Windows\System folder.

Under the *Settings/General* tab, enter the path to your working directory. This is the folder where Beaches will look for your source file, as well as the folder where it will copy the final processed

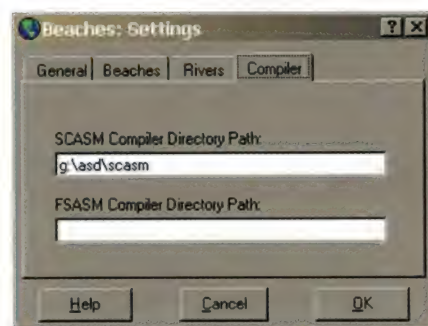
.BGL file. Omit "scenery" from the path. Now enter the path to your FS texture folder. Don't worry about the *Invert Regions* check box now. We'll discuss that later.



Now click the *Beaches* tab. Put a checkmark beside "Process." Enter the name of the texture file you will use. Beaches comes with several texture files you can use, or you can make your own. Place an asterisk '*' in the Region Names box, and put a checkmark beside "Automatic."



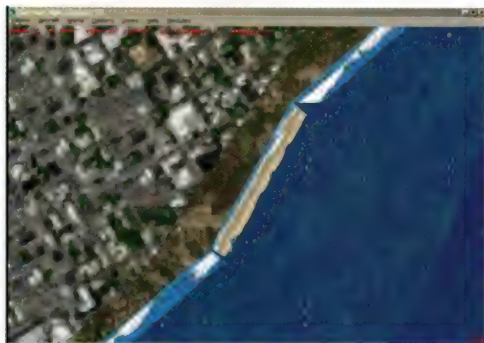
We won't discuss the *Rivers* tab in this article, so skip it. Under the *Compiler* tab, enter the path to your preferred compiler, either SCASM or FSASM.



Now pull down the **File** menu and click **Open**. Find your source file and double-click on it. The file will appear in Notepad in the Beaches desktop area. Pull down the *Options* tab and click "Process." Beaches will now take several minutes (or less, depending on the size of your source file) to process the file. A progress bar will show the progress. After processing completes successfully, you will see a summary of the operation on the bottom status bar of Beaches, telling you how many regions were processed and how bytes were added to the file.

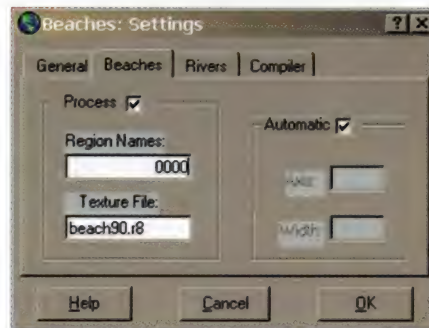
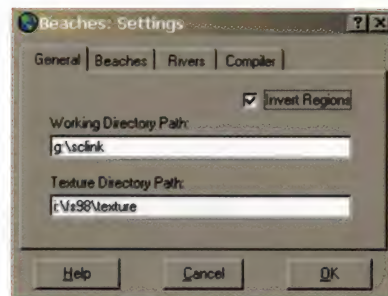
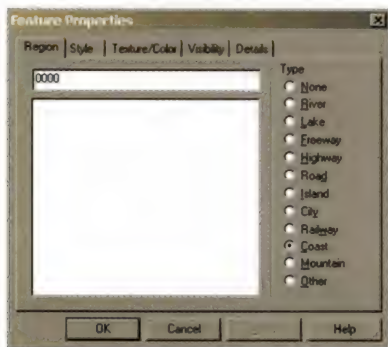
Now, pull down the **Options** menu again and click **Compile**. You will be prompted to save the file. Click **[Yes]**. Save it with the desired file name and click **[OK]**. The compiling process will begin and you will see a DOS window while the source file is compiled. If all goes well you will see "Compilation=OK" in the bottom right of the status bar.

Now, make sure the compiled file has been copied to your scenery directory, start FS and look at the result. Go to Map view and slew along your coast, noting and ensuring that the sandy part of your beach texture is adjoining the land and not the water. If all is well, that's it. You're done. Keep in mind, though, that anytime you recompile in ASD, you will have to repeat the Beaches processing again, because ASD will overwrite the processed file with an unprocessed file. This is why the Beaches processing should be the last thing you do before gathering your distribution files.



However, in most cases you will find a few beach segments where the sandy part of the texture is adjoining the water instead of the land. In other words, the texture is "inverted." This is the reason for the "Invert Regions" text box under the **Options | Preferences | General** menu in Beaches.

So, now we will require some further processing in both ASD and Beaches. With both ASD and FS open, identify the beach polygons that are inverted by slewing in FS and finding the corresponding polygons in ASD. Upon finding the offending polygons, right-click on them and choose **Properties**. In the upper box of the **Region** tab, type "0000" (without quotes), or any name that will make these inverted polygons unique in the source file. Now save and recompile in ASD.



Open the source file in Beaches again. Pull down the **Options** menu, and under the **General** tab, now put a checkmark beside "Invert Regions." Click the **Beaches** tab and replace the asterisk with "0000" in the Region Name box. Now pull down the **Options** tab again and choose **Process**. Beaches will now search for all the coast regions named 0000 and invert them. When this pass is done processing, you will see the number of regions Beaches has processed on the status bar. This total should equal the number of polygons you have named 0000. You will also notice that Beaches has placed a "+" in front of the regions it has just processed. This tells it to ignore these regions for the next pass. Do not compile yet. We have to make a second processing pass through the source file.

Pull down the **Options | Settings** menu again. Under the **General** tab clear the **Invert Regions** check box. Under the **Beaches** tab, replace the 0000 with an asterisk, telling Beaches to process all coast regions (except the ones with "+" in front of them.) Click **[OK]**. Now process the source file again. You will again be prompted to save the file. Do so. When the processing is complete, compile it as you did before.

Open FS and check your work. The regions that were previously inverted should now be OK.

A note about exclude files

If you go into FS and don't see your enhanced beaches, chances are that the default polygons are covering your work. Make sure your exclude files are covering any possible default coast polygons and make adjustments as necessary. And that's how to enhance your ASD coastlines with Luis Vieira de Sa's Beaches program.

Happy designing and see you next time, when we will discuss how to gather up your project, write the documentation and prepare its distribution to your eagerly awaiting public.



Homebuilders' Corner

By David Lewis

This issue: Painting by numbers

This issue deals with painting the Tiger Moth. In case you've missed any of this aircraft-building series, I've provided all the parts (available in the file TMOTHP2.AFX) on our Website at <http://www.ftmagazine.com>.

We have already planned the textures we should use, based on the standard shape of a texture (256 pixels wide x 128 pixels high). The plan is:

Name	Covers
Fusefwd	All the fuselage from section 5 forward
Fuseaft	Fuselage sections 6 & 7
TailWhl	The vertical tail & the wheels (which is a good trick, explained later)
WingUL	The upper left wing
WingUR	The upper right wing
WingLL	The lower left wing
WingLR	The lower right wing
Hstab	The horizontal tail surfaces
Heads	The heads of the two pilots

Did I miss anything? If so, there's one texture spare for you to cover it later. Aircraft Factory limits you to using just 10 textures on an aircraft. You could use it to paint the instruments on the cockpit bulkheads, perhaps.

Making the textures

Let's start with FUSEFWD. Go into the blueprint view for the Tiger Moth, select a side view (**View | Side**), and adjust it to nicely fill the screen. You can re-center the image by clicking the right mouse button on the point you would like to be in the center of the screen. You can also change the size by using the **Zoom** menu. Once

the blueprint looks good on the screen, select **Shuttle Bus to | Souvenir Shop**. This puts the picture of the aircraft into the Clipboard.

Now exit from the blueprint and the parts list, so you can find your way around the screen, and start a paint program. Any paint program should do. Paint Shop Pro is very good, Neopaint is another option, but even the free paint program in Windows's Accessories group will be good enough for this job. Within the paint program, select **Edit | Paste** to create a new image file of the side view. Now save this (**File | Save As**) as \AF5\Tmoth\BLUESIDE.BMP—I always name it the same thing for convenience. Every aircraft project I've worked on has a file called BLUESIDE.BMP, and it's always the side-view blueprint for painting.

The next step is to cut out a section for use as a texture. Here the Windows Paint application won't do the job, because it can't save as a .PCX file, so you'll have to use another tool for this stage. When you've got BLUESIDE open in a paint program, look around the margins for a status line showing you where on the picture the cursor is positioned.

Note the Y coordinate when the cursor is exactly over the floor of the forward cockpit. Next note the X coordinate of the forward bulkhead in the rear cockpit. Pick the rectangular selection tool, and position the cursor at the X & Y coordinates you have noted down. Carefully drag a rectangular selection box to cover all the forward section *exactly*. The edges of the box must lie exactly on the lines of the picture.



time re-sizing it to be 256 pixels wide by 128 pixels high. The exact details of how you do this will depend on your paint program. Then copy the lower half, flip it left/right to create a mirror image flying to the right, and paste that over the upper half of the image.

As you paste these parts, the paint package should prompt you to convert the colors to the palette of FUSE_STD.PCX, which is exactly what you want to do.

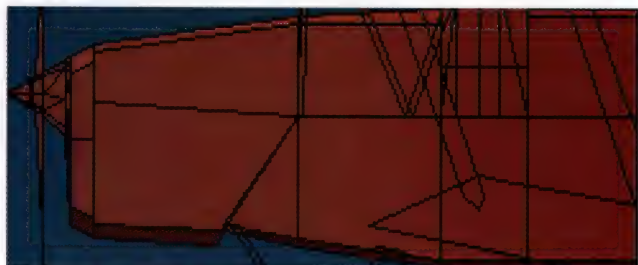
For FUSEAFT repeat the process above, but select the rear section of the fuselage.

One trick to watch here is to make the top of the selection box exactly the same height as the selection for the front of the fuselage. This may seem wasteful, since it means selecting some empty space above the rear fuselage. However, it means that the two selections are the same height, so that if you paint a stripe down the side of the fuselage it will be in the same place on both the textures. This can save hours of fiddling around with stripes that are three pixels deep at the front and about two-and-a-half pixels deep at the rear!



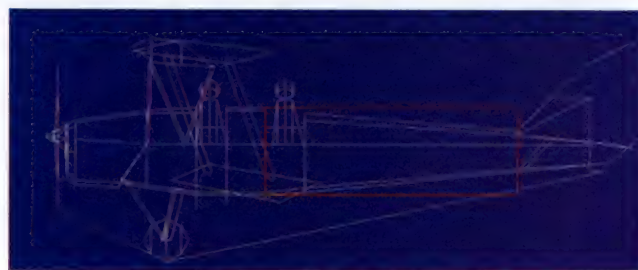
If you don't get it right first time, keep trying, because it will make a big difference to the job of painting later.

Once you've marked the selection, click **Edit | Copy** and **Edit | Paste** to create a new image with it. The first thing I do with the new picture is to change the colors! Use the color replacement tool to replace all the lines with black, and then fill the interior with the color you wanted. In this case I've decided to copy a Moth I saw at Farnborough, so I'll use red. It's easier to change the colors at this stage, rather than later.



Notice how I've used different shades of red to emphasize the shading on the floor of the fuselage.

Now that we've got a basic red side view with some lines on it to help us position features, it's time to re-scale it and correct the palette. Open AF5_STD.PCX (in your \AF5 folder), and save it as FUSEFWD.PCX (to make a copy). Now **Copy** the whole of your current picture, and paste it over the lower half of FUSEFWD.PCX, at the same



Putting up the wallpaper

To apply these two textures, go into Aircraft Factory and from the **Assembly Line** menu, select the **Shuttle bus to | Photo Lab**. Next, **File | Select PCX | FUSEFWD**, and click on processing for Side/front. Repeat for FUSEAFT.

Now go to the list of parts. For each piece of fuselage, set the object art to "FUSEFWD" or "FUSEAFT" as appropriate. Then go back to the top, pick a part in the FUSEFWD group, and click on "set art options." Make sure you've selected left/right application, and click on "all objects sharing PCX." Note (on paper) the top and bottom numbers. Mine are 1.5 and -2.1.



Problem planes No. 5: Can you see the joints?

This issue's problem is what to do when you want to repaint an aircraft, but you don't have the .AFX file.

Maybe you've downloaded a plane from an Internet site or bought one as part of an add-on CD. You love the plane, but wish it were painted in the colors of your local airline. Without the .AFX file or the .PCX files for the textures, you can't use Aircraft Factory to change the appearance. What can you do?

The first step is to convert the texture files into something you can edit. There are a number of free tools available to let you do this, including r82bmp, r8worx, and r8edit. You can find tools like these on the Internet at sites like <http://www.flightsim.com> that specialize in flight-sim add-ons. They let you convert texture files (usually with the extension .R8) into .BMP files that can be edited. Although they may not mention it, they also work with aircraft texture files .0AF, .1AF, etc.

So, you can convert the texture file to a .BMP, edit it with your favorite paint program, and then convert it back again.

Unfortunately, there will be a few parts (like the struts on this Tiger Moth) that are colored but not textured. These are a little harder to alter without the .AFX file, but it can be done for FS95 or FS98 aircraft. To get these you will need a "hex editor." Several of these are available free on the Internet, including HEd, Hexed and PSEdit. They let you view your file, not as meaningful text like a normal editor, but as a string of hex codes.

The hex codes for colors are "52 00 xx F0," where xx is a color code from the table below. All you have to do is edit the .MDL file, change the color code to the one you want, save the file, and the color changes. I always recommend saving a copy of any file before hex editing it, just in case you make a mistake.

The descriptions are my own, and may seem a little vague, but my wife is the painter in our family. Also, be warned that some colors produce bizarre effects when used on smooth components.

00	Black	20	Dark Red
01	Dark Grey	21	Dark Green
02	Grey	22	Dark Blue
03	Light Grey	23	Dark Brown
04	White	24	Dark Olive
05	Red	25	Dark Tan
06	Green	26	Coffee
07	Sky Blue	27	Dark Orange
08	Orange	28	Dark Green
09	Yellow	29	Mid Red
0A	Tan	2A	Mid Green
0B	Chocolate	2B	Mid Blue
0C	Brick Red	2C	Dark Orange
0D	Mid Green	2D	Dark Yellow
0E	Blue-grey	2E	Dark Brown
0F	Red (lights up at night)	2F	Stone
10	Green (lights up at night)	30	Dark Red
11	Blue (lights)	31	Dark Green
12	Cyan (lights)	32	Light Grey (lights)
13	Orange (lights)	33	Dark Grey (lights)
14	Yellow (lights)	34	White (lights)
15	White (lights)	35	Black
16	Grey (lights)		

Set the art options for every part, but for parts with the FUSEAFT texture, overtyping the top and bottom numbers with the ones you wrote down. This finishes the job you started when you made the two textures the same height, even though one was now bigger than the parts it is texturing.

Also, be sure to change the Application Type on all the components to "Smooth." If they were not going to be textured, then "collection" would give the best lighting effect on them, but only smooth components can be textured.

Produce the result and check the appearance. This is what I get, and it's not too bad for a first cut. You can see the construction lines, which are useful in placing markings accurately and can be rubbed out later. The couple of blue patches mean that even with my careful cutting and pasting, my textures are still a pixel short along some of the edges. For example, the blue front to the engine can be fixed by adding a line of red or black pixels to the front of that area on FUSEFWD.PCX—just remember to do both the top and the bottom!

Repeat until finished

Keep working on the .PCX files for FUSEFWD and FUSEAFT until they look superb, checking the effect regularly. Also, remember to take a copy of your work before doing anything major, such as rubbing out all the black construction lines: you might need them again later!

You can repeat the whole process to create a top view of the Tiger Moth, called BLUETOP.BMP, and from that the four wing textures and the HSTAB texture. The only difference is that everything is marked "top/bottom" instead of "left/right." For top-and-bottom textures, the top view goes at the top of the .PCX, and the underside goes at the bottom, both with the forward edge toward the top of the image.

There is a clever trick for the tail & wheels to get them both out of a single .PCX. This works fairly well, since both are somewhat square in shape. Copy the tail and rudder section and re-size it to be 128 pixels square, then put it in the corners of another copy of AF5_STD.PCX. Put circles in the other two quarters.

Now go back to the assembly list and add the artwork to the tail, rudder and wheels. For the tail section, set the artwork to TAILWHL. Do the same for the rudder, and set the art options on it. The rudder needs left/right application and should fit to all parts that share the .PCX. So far, that's the same as all the other parts. Now work out the difference between the fore and aft numbers. Mine are -12.1 and -17.6, so the difference is 5.5. To make sure that the texture is used in quarters rather than halves, double this distance by setting the fore number to -6.6.

For the wheels, select the artwork (TAILWHL) and set the art options to left/right application on this object only. Once again, note the fore/aft numbers, which in my case are 2.7 and 0.9, and this time move the aft number backward by the difference ($0.9 - 1.8 = -0.9$). Bingo, we have created both main wheels and the tail wheel out of a single .PCX!

You can use this same trick to get both pilots' heads out of one texture: put the two faces and two backs-of-heads into the quarters of the .PCX, and this time offset the positions left and right to achieve the quartering.

Inspiration

Here's a new source I only discovered recently: Alta Vista. My favorite Internet search engine now includes an indexed photo finder. Just point your Web browser to <http://www.altavista.com> and look for the words "AV Photo Finder" to click on.

I tried a search for "Tiger Moth" and very quickly got back a dozen thumbnail photographs. OK, so half of them were strictly for lepidopterists, but there were four different De Havilland Tiger Moths in my dozen. And that was just the first twelve of 2,005 pictures found. A couple of pages through the results I found the amusingly registered G-ANJA, with a big photo to work from.

Here are a couple examples of the kind of thing you can find. I can take no credit for the excellent photographic quality. The first was from Hypermax, the second from Moore Aviation Restoration, Inc. Either of these would be a great source for creating your own color scheme.



Have fun with the paint job, and next time we'll tackle the flight dynamics.



Tutorial

Working with MS Flight Simulator Textures

By Tim Dickens

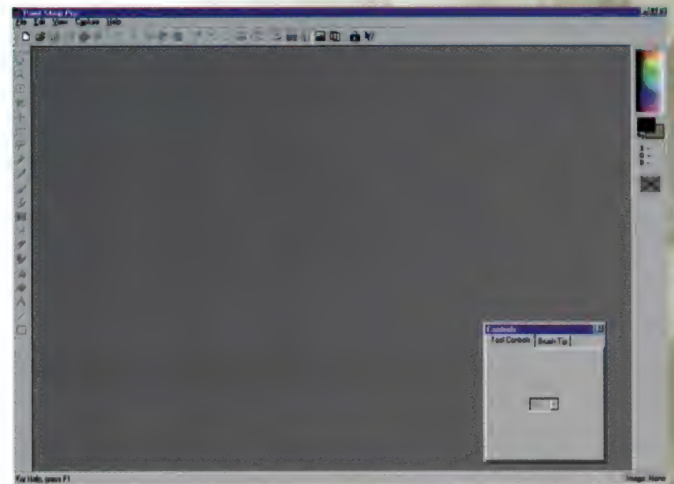
After flying around Flight Simulator's default world for a while, it may seem that one area looks very similar to another. You can add some variety to the FS world by creating your own scenery textures. In this tutorial, I will demonstrate how to create custom scenery textures with Paint Shop Pro v.5.1, from Jasc Software. (An evaluation version of PSP 5.1 can be downloaded from Jasc's Web site at www.jasc.com.)

Part I: Setting up Paint Shop Pro for working with MSFS textures

Now that you have PSP 5.1, you need a JASC-compatible FS color palette to work with these textures. You can find it on my Web site at <http://www.kc.net/~dickens/files>. The file name is FS.PAL.ZIP.

Place this file in your main PaintShop Pro 5 directory. This is where the program will look for it!

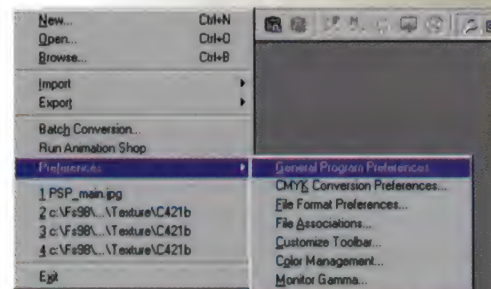
Open PSP. This may look intimidating at first, but I will tell you what you need to know.



The first thing you want to do is set up your toolbars and general preferences. Step-by-step:

Step 1

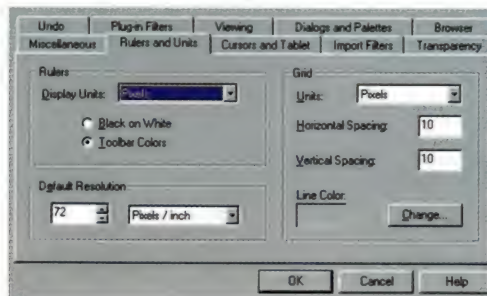
Go to **File | Preferences** and select **General Program Preferences**.



Working with MS Flight Simulator Textures

Step 2

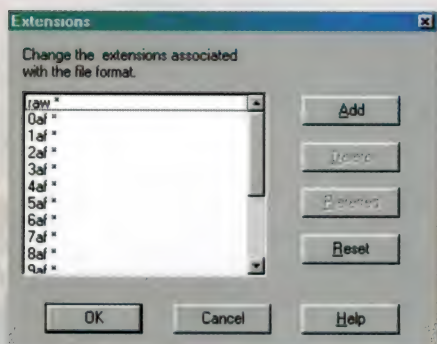
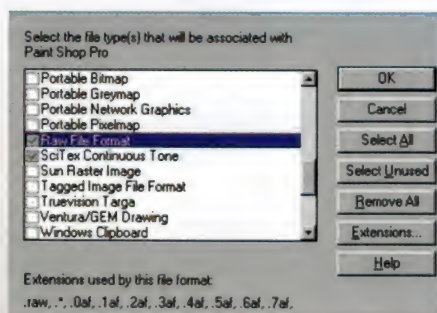
Select the *Rulers and units* tab. Make the display units "Pixels" and the default resolution 72 pixels/inch.



Step 3

Go to **File | Preferences** and select **File Associations**. Scroll down the list and select "RAW File Format." This is what FS textures are: 8-bit, 256-color RAW palette indexed bitmaps. With that box checked and highlighted, select "Extensions." This will create a list of file-name extensions that PSP will recognize as standard RAW images.

Simply type in every file extension you have seen used in FS. Do not put a period '.' before these extension names!



A minimal list should include:

- ✈ r8 - Standard MSFS extension
- ✈ 0af - Standard Flight Shop texture extension
- ✈ 1af - Standard Flight Shop texture extension

- ✈ 2af - Standard Flight Shop texture extension
- ✈ 3af - Standard Flight Shop texture extension
- ✈ 4af - Standard Flight Shop texture extension
- ✈ 5af - Standard Flight Shop texture extension
- ✈ 6af - Standard Flight Shop texture extension
- ✈ 7af - Standard Flight Shop texture extension
- ✈ 8af - Standard Flight Shop texture extension
- ✈ 9af - Standard Flight Shop texture extension
- ✈ 10af - Standard Flight Shop texture extension

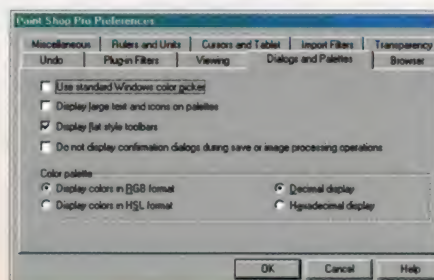
And these that I have collected over the years:

- ✈ afx
- ✈ oav
- ✈ pat
- ✈ tex
- ✈ txr

If you run across more later, simply add the new extension to this list, and PSP will recognize it for what it is.

Step 4

Now go to **Options | Preferences** and select **General Program Preferences** again. Now click on the *Dialogs and palettes* tab. Select "Display Flat Style Toolbars," "Display colors in RGB" and "Decimal Display."

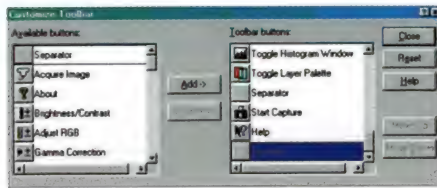


Step 5

Now let's set up your toolbar. This will give you access to the most important functions of PSP, without having to find them in the menus.

1. Go to **File | Preferences** and select **Customize Toolbar**.

Working with MS Flight Simulator Textures



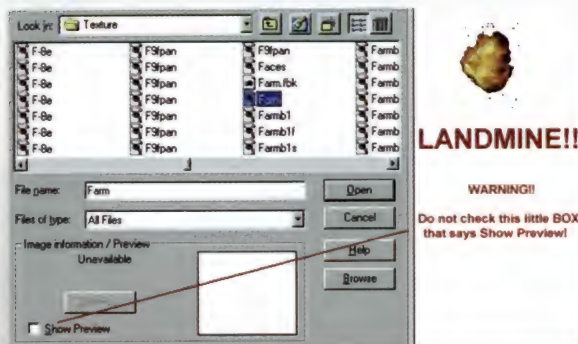
2. You now have a list of functions. Here is what you will use from time to time when working with FS textures:



You can organize them as you like, using the separator selection to distinguish individual groups of tool functions.

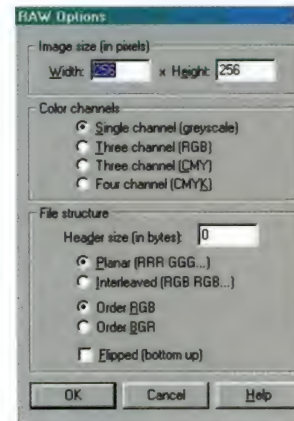
The next step in setting up PaintShop Pro 5 is to properly format the RAW image parameters, so that you can open FS textures by double-clicking from the PaintShop Pro 5 **Open File** menu.

- a. Now that you have your file associations set, go to the main FS Texture directory on your system from the **Open Files** menu (or toolbar icon). You will see all of the files listed. Double-click on one of them—Farm.r8, for this example.



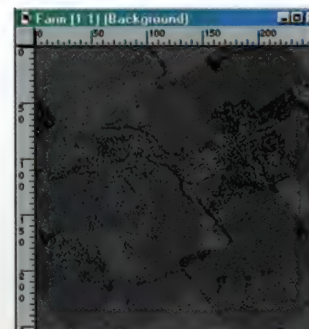
It's a nice little feature when you're scanning .bmp files, .jpg files, etc. But try it with a RAW, unrendered image and this will screw up all your preferences.

As soon as you double-click on the file, you will be presented with this dialog box:



Fill out all of the selections as I have illustrated here. This is the format that MSFS uses for textures. PaintShop Pro 5 will save these settings in it's configuration memory. So, the next time you bring up a texture file, you will not have to make any selections in this dialog box.

- b. Click **OK** and you'll see a RAW image without any color that looks like this:

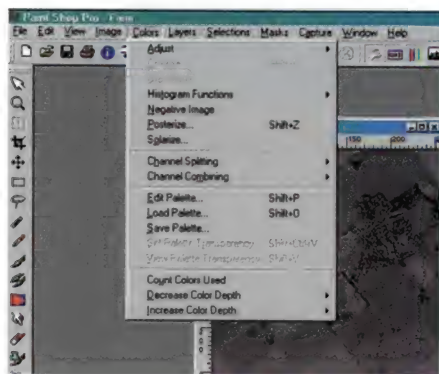


RAW images are always presented without any color palette loaded. This is one thing about this format which is different from .bmp, .jpg, and other formats, which carry their own specific color palette with them.

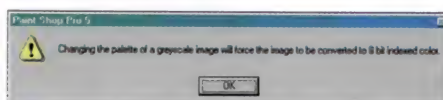
Now is when you will make use of the special color palette that you have downloaded (above).

- c. Now go to the PaintShop Pro 5 menu and select **Colors | Load Palette**.

Working with MS Flight Simulator Textures

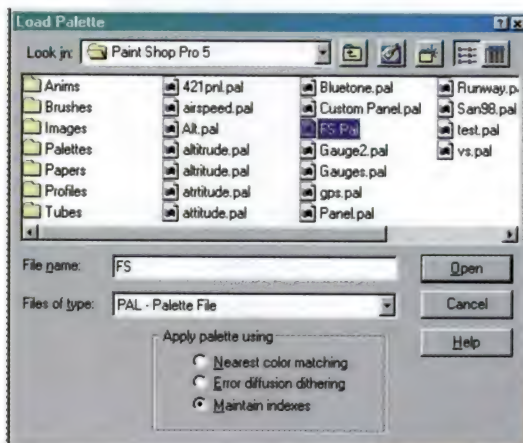


You will then see this dialog box:



All FS textures are 8-bit indexed color, so this is not a problem.

Click **OK**. Unfortunately, PaintShop Pro 5 always presents you with this dialog box when you open a texture. You will next be presented with this dialog box:

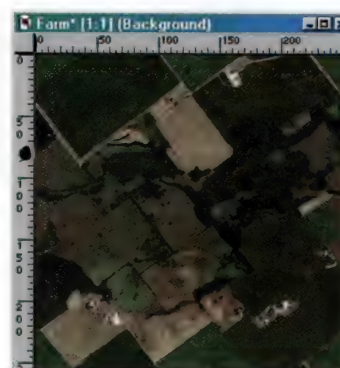


Select "Apply palette using Maintain Indexes." This will assign the proper color index number from the FS palette to the image.

Note: This selection is only true when you are applying the FS palette to established textures! When loading the FS palette to another type of image, such as a .bmp file, you should select "Nearest color matching." This is important when converting .bmp images for use as textures. Your original .bmp must contain the same 256 colors as the FS palette!

More on this in the next tutorial.

Now click **Open** and the texture will appear in true FS colors:



Now you have a color-correct image of the FS texture open on your desktop.

From this point, open textures with the instructions in step 3, above, and you will be able to create new textures, modify them, or use the cut and paste functions in PaintShop Pro 5.

In the next issue, there will be a tutorial on working with FS aircraft textures, so that you can utilize the powerful tools that PaintShop Pro 5 provides to paint your own airplanes.



Full Throttle Looks At DID's Total Air War

By Rod White

Instead of the inexpensive add-on disk DID originally promised, **Total Air War** (TAW) is an all-new, stand-alone, boxed product. DID and Infogrames are offering a \$15 mail-in rebate for previous F-22 ADF users, but this offer is only good in the US (because the coupon can only be found in the US boxed version of Total Air War).

Total Air War was released in the UK about a month before it reached our North American shores. I had both releases, and some small differences existed between the two, but nothing had changed in the actual code. The software are identical, they just pressed prettier CDs for the US release. The box Infogrames created for the US version is also more impressive looking than the UK release.

Documentation

F-22 ADF shipped with a cool bonus book, *Allies and Adversaries*, created with content from the world-renowned *World Air Power Journal* from Aerospace Publishing in the UK (distributed in the US by Airtime Publishing). In Total Air War, they've taken most of the content from that bonus book and reprinted it in black and white in the back of the Total Air War Manual.

The
manual
for
Total
Air



War was also created with the help of two experts on military operations and doctrine, Dave Putze USMC (ret'd) and Colonel Richard Reynolds USAF (ret'd). Dave Putze had written the manual for Graphic Simulation's F/A-18 Korea, an F/A-18 Hornet combat simulation, a little over a year ago, so he's no stranger to the combat simulation genre.

The Simulator

Let's dig into the actual simulation now. You won't find the 30 scripted campaign missions from F-22 ADF in Total Air War. Instead, Total Air War features ten dynamic campaigns to choose from, giving you a virtually unlimited number of missions to fly in ten unique campaign scenarios. The Custom Mission creator serves as an instant-action scenario creator, allowing you to select a few parameters before taking flight, like who the adversary will be, how many of them you'll encounter, where the action takes place and what weapons you will load onto the aircraft. The flight modeling and avionics in Total Air War are identical to F-22 ADF. Flying the actual F-22 and playing any of the missions still feels just like playing F-22 ADF once you reach the cockpit.

The new challenge is in completing the dynamic campaign scenarios, which can be very challenging! There is a lot more to TAW than meets the eye. From a gameplay standpoint, a great deal is going on around you before you even make it to the cockpit. As you complete missions, the progress you make is tracked and you will be promoted according to your performance.

Early on you'll notice that many of the missions generated can't be flown yet, because your rank isn't high enough to unlock them. Experience will unlock these missions for you. The scoring system in TAW is pretty complex too, but it can be a rewarding system if you play your cards right. If you find that your plane is damaged pretty badly, it's wiser to nurse it home and land a plane that barely functions than it is to eject and leave it somewhere behind enemy lines.

Note about the predecessor: DID F-22 ADF

DID and Infogrames released F-22 Air Dominance Fighter (F-22 ADF) a little over a year ago. Last year we were bombarded by a barrage of more F-22 Raptor combat simulations than you could shake a joystick at. Novalogic released F-22 Raptor and Interactive Magic put iF-22 on the shelves. DID's F-22 ADF was last to surface, but it captured the attention of more hard-core combat simulation enthusiasts than the others, for many reasons.

For starters, it offered support for 3-D accelerators via Direct 3D (D3D) and 3Dfx Glide (3Dfx's native API for supporting 3Dfx hardware). Interactive Magic's iF-22 also featured Direct 3D support, but F-22 ADF looked much better to most users. F-22 ADF pleased the masses with better graphics and the ability to reach 800x600 resolution with D3D or 3Dfx Glide.

The flight and avionics modeling was more believable in F-22 ADF as well. The flight modeling offered in other simulators was good, but it wasn't enough to please the hard-core combat simulation enthusiast. Interactive Magic's iF-22 didn't do a bad job of modeling the F-22's flight model and avionics. But F-22 ADF went a few steps further by offering an amazingly detailed 3-D cockpit, blowing away iF-22's 2-D cockpit (which was later updated to 3-D for iF-22 v5.0, but it still couldn't match what F-22 ADF featured).

Once in the cockpit of F-22 ADF, the pilot was treated to an amazingly detailed 3-D cockpit with all of the Multi Functional Displays (MFDs) one would expect to find in the real plane. Each MFD could be brought up in a full-screen mode by hitting the appropriate key on the keyboard's number pad. From there the buttons and functions within each MFD could be manipulated with the mouse. Changing the autopilot modes, adjusting various settings, or just changing radar ranges manually could be done with the mouse in a full-screen MFD mode. The simulation also featured an excellent wide-angle cockpit view, which provided a view of the cockpit as if you were sitting back in it. This gave the simulation a much higher level of immersion than any of the competition's products.

The in-flight communications system was deep, and a wide variety of commands could be given to your wingman. The simulation also featured a ground-breaking feature: the ability to control the Airborne Warning and Control System (AWACS) and take charge of the battle from the perspective of an AWACS commander! This part of the game played more like a real-time strategy game. You could vector planes to visually identify possible threats and to intercept them, and to top it all off, you could double-click on any of the F-22 planes from this God's eye view to take command as the pilot of that aircraft!

Once you got killed, completed a mission or just got tired of flying, you could escape back to the AWACS interface and start all over again, vectoring planes around or flying other F-22 missions. The problem with F-22 ADF was that it lacked enough missions to keep you involved beyond completing the scripted campaigns. It only featured a handful of missions to complete, and it did not feature enough AWACS missions to please most of us.

F-22 ADF featured 30 scripted missions, spread through three tours of duty. These were called the Red Sea Tour, Eritrea Tour and Saudi Arabia Tour. Having only 30 missions was a big limitation, especially considering that the multi-player options were limited to head-to-head and competitive team play, with no option for cooperative multi-player support. So, you couldn't log in over a LAN or over the Internet with a buddy playing out the scenarios as leader and wingman.



Full Throttle Looks At DID's Total Air War



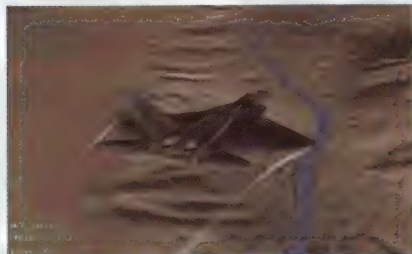
3-D cockpit with MFD identifications



Aircraft damage visual effects



Angled 3-D view within the cockpit is possible



Rendering of 3-D terrain



Sunlight glare effects

If the mission calls for escorting another plane, do just that and avoid the opportunities to intercept other planes, unless the AWACS orders you to do so. Points can be lost for ejecting from a plane that still flies or dying in combat, so it's best to closely follow your mission objectives, instead of trying to kill as many planes as possible.

The campaigns also have tactical objectives that must be met. This isn't a simulation where shooting down the most planes wins the scenario. You must take out many important ground targets, like early warning RADAR systems or industrial

targets, in attempts to cripple the enemy's ability to re-arm and fight another day. In some cases, you will destroy political targets to make a statement. This is much more than just a simulation of air-to-air combat. Although the title is "Total Air War," it's actually a simulation in which you must control the skies with air power. But many mission objectives will be to take out important military, industrial and political ground targets. In some instances you'll be taking out actual ground units to keep the enemy from invading allied territory. So as you can see, a very complex dynamic campaign system is at work in Total Air War.

With ten unique dynamically driven campaign scenarios to choose from, it will take a good while before you run out of challenging missions to fly in TAW.

With ten unique dynamically driven campaign scenarios to choose from, it will take a good while before you run out of challenging missions to fly in TAW. Best of all, the way the missions are generated, you really never have to fly any of the missions if you choose to play it that way! For example, in TAW you can choose to play just the AWACS missions, and because the scenarios are dynamically generated, you'll never run out of AWACS missions to fly!

Within AWACS missions, the simulation is played out from a God's eye view of the entire theater. Everything happens on the screen in real time. All of the allied, enemy and neutral planes can be seen on the screen at the same time as they engage each other. They intercept or visually identify threats or attack vital ground targets. A 3-D view of any of the planes that have been visually identified can be brought up in real-time too, so you can follow the action as it happens. Like F-22 ADF, you can also double-click on any of the allied F-22 aircraft in the theater and join the mission in progress as the pilot of that plane.

A wide variety of information is at your disposal, which can be toggled on by selecting buttons bordering the main view screen. You can toggle so much information on at once that it's almost an overload of data until you learn what it's all used for. Since I've flown F-22 ADF on and off countless times since it debuted last holiday season and since it lacked more AWACS missions, I am really enjoying the AWACS missions in Total Air War more than flying the simulation as an F-22 pilot.

Full Throttle Looks At DID's Total Air War



Mission control



Realistic supersonic exhaust shockwaves are displayed



AWACS display

New features

If you enjoy piloting the F-22 aircraft, TAW offers a significant number of new features that will please hard-core F-22 ADF pilots. The first most impressive feature is the Mission Planner. Many complained about the lack of more in-depth mission planning capabilities in F-22 ADF. TAW addresses this concern by featuring a very in-depth Mission Planner.

No matter what mission is at hand, you can dig into the Mission Planner to modify many things. In F-22 ADF you didn't have a lot of mission planning capabilities. You do in TAW. You can edit, delete and add complete flight packages, change, create and delete waypoints, assign targets to specific flights and you can even set the altitude at which a flight will pass the waypoint. If that's not enough, you can also determine the actual attack pattern of the flights from the Mission Planner. The Mission Planner in TAW is a powerful tool, but it's not so deep that you'll get lost in it, because they counted on the casual combat simulation enthusiast wanting to jump in and have some fun too.

If you decide to jump into the Mission Planner, you don't actually have to plan the entire mission. Simply changing the loading of a single flight or moving a waypoint can be done without being required to plan the entire mission. They offer default settings for all of the selections, so you can change what you like and leave the rest alone. This I liked a lot, because most Mission Planners want you to essentially design the entire mission. This one gives you the ability to do



A great amount of data can be displayed on the head-up display (HUD)

that or to change what you want without having to know every detail about mission planning.

Multiplayer

DID had originally announced enhanced multiplayer options would be in TAW, but they didn't enhance TAW much over what F-22 ADF offered. However, there is a multiplayer Custom Mission creator. Here you can select a few different parameters before taking flight, but it's essentially an Instant Action feature for multiplayer games. They do include a handful of specially designed missions for cooperative multi-player gaming as leader and wingman, but sadly, campaign cooperative multi-player support is missing in action. However, over a LAN the head-to-head options in TAW are great (these are the same options that F-22 ADF offered). Internet support is provided, but unfortunately, it's not that great. Running it over a LAN is as fun as multi-player gaming gets in TAW.

Total Air War is by far the best F-22 combat simulation available. It features everything good found in F-22 ADF with the addition of ten dynamic campaign scenarios, in-depth mission planning capabilities, limited cooperative multi-player support and a never-ending supply of AWACS missions.



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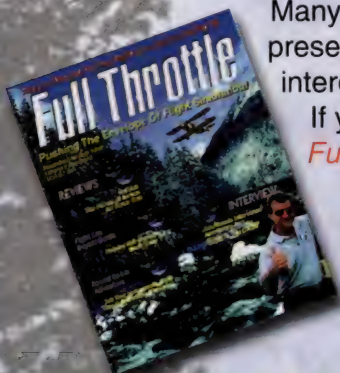
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Conclusion

Total Air War is a nice product all around if you're looking for an easy-to-get-into combat simulation of the F-22 aircraft. It allows you to dig deep into avionics and weapons systems and features support for Direct 3D and 3Dfx Glide 3-D accelerator boards, but the AWACS missions are really what makes this product stand out.

Although F-22 ADF was a great product, it's now over a year old. Many of the features found in TAW are things we'd loved to have seen in F-22 ADF a year ago. If you've never owned F-22 ADF, you'll really get the most out of this simulation, because it's a feature rich product. However, if you've already played F-22 ADF, then it's not that much different. Even with all of the great enhancements and improvements, it still feels like you're playing F-22 ADF once you get into the cockpit and take to the skies.

The players who are not entertained much by F-22 ADF today do have the AWACS missions to look forward to in TAW. Since the product features ten different dynamically driven campaign scenarios, you can simply choose the AWACS missions as they become available without ever taking flight in the F-22. The AWACS missions are actually the only missions I play now, because I'm not that entertained with flying the F-22. I've done it too many times already in F-22 ADF and in the Red Sea Operations campaign CD SimTech released for F-22 ADF earlier in the year.

For More Information

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So, there's a little something for everyone, but in the end this is really a product that will appeal more to the combat simulation enthusiast who hasn't flown F-22 ADF from beginning to end and moved on to something else already or the diehard F-22 ADF enthusiast who's been waiting for over a year to fly dynamically driven campaign scenarios in F-22 ADF with in-depth mission planning capabilities.

Total Air War is by far the best F-22 combat simulation available, and it's a nice total package if you're not already burned out by having played to death the barrage of F-22 Raptor combat simulations released last year. It features everything good found in F-22 ADF with the addition of ten dynamic campaign scenarios, in-depth mission planning capabilities, limited cooperative multi-player support and a never-ending supply of AWACS missions.



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ELITE Electronic IFR Training Environment

Reviewed by Jim Rhoads

Of the many things that I enjoy about flying, what attracts me the most is the challenge. Weather often creates this challenge. I love cranking the rudder and dropping the aileron into the wind to hopefully bring my plane in for a perfect one-wheel crosswind landing. I also enjoy flying VFR on top and dropping through a hole to get back under the clouds. Nature's elements afford many challenges that make every flight unique. Unfortunately, VFR flying also makes you a *victim* of the elements. Many days I have cursed the clouds and winds that sometimes ruin my plans, where before they brought me pleasure.

I have done a lot of instrument flying and have accomplished IFR time in actual conditions, plus many hours of simulation. I am fairly confident that I could save my butt if necessary. But that is not a wise position in which to place yourself. Plus it's ***not*** what the FAA wants to see. So, it is time for me to get the "Instrument Pilot" endorsement typed on that little piece of cardboard that I store in my wallet.

Timely enough, Aviation Teachware Technologies has allowed us to use their FAA-approved ELITE software training package and avionics panel, paired with Precision Flight Controls' FAA-approved yoke, rudder pedals and throttle quadrant. In addition, because I have elected to have a certified flight instructor evaluate my training with the ELITE package, the FAA allows 10 hours (see PCATD below) of this specific software/hardware configuration to be credited toward my instrument certificate.

Some years ago during my initial flight training, my instructor knew that I was very involved in flight simulation. I remember him mention that ELITE was one of the most realistic simulators he had ever flown. In this wonderful hobby, many of us are real-world pilots as well as diehard simmers. Therefore, this article may be geared a little more toward that, but this certainly does not exclude anyone else who is interested in a serious IFR training system such as ELITE.

The Package

ELITE has just released the new version, 5.3. One advantage of the new version is that it now runs in a Windows interface instead of a DOS shell, as the prior versions used (version 5.3 is available for Mac and IBM-compatibles with Win 95/98/NT). These aircraft and panels are part of the new Prop Version CD-ROM.

- ✈ New Cessna 172R
- ✈ Cessna 172
- ✈ Piper Arrow IV
- ✈ Mooney M20J
- ✈ Trinidad TB-20
- ✈ Tobago TB-10
- ✈ Beech Bonanza A-36
- ✈ Thick, Hardcover Operators Manual
- ✈ Universal Control Interface

ELITE Electronic IFR Training Environment



History

In 1986 Rudolph Marty, a computer scientist at the University of Zurich in Switzerland, used an Apple Macintosh and a new programming method to demonstrate the power of personal computers. Motivated by his love of flying, Dr. Marty used a combination of enhanced color standards and a graphical user interface to create a PC-based flight simulation system for use in pilot training. He named his program "INTRA," short for "Instrument Trainer."

In 1988 Urs Ribi, an airline Captain, developed a simulator based on the McDonnell-Douglas MD-81. The simulator had accurate jet power characteristics and aerodynamics, coupled with detailed cockpit instrumentation and compatibility with the fundamentals of the original INTRA system.

Working closely together, both men developed significant improvements in the software, resulting in the 1990 creation of the **Electronic IFR Training Environment: ELITE**. As ELITE began to grow and gain respect in the aviation community, other professional pilots and computer experts help expand the team that eventually became known as Initiative Computing, AG. As the company began to grow, they expanded into high-performance aircraft with flight directors like the Mooney M20J and the Trinidad. A separate graphical instructors station was created using the Macintosh computer (and now available for Windows 98 in ELITE 5.3).

In 1994 Initiative Computing introduced a Piper Seneca III to the ELITE package, making it the first PC-based twin-engine IFR trainer. This model had advanced aerodynamic modeling and asynchronous thrust, allowing single-engine operations under IFR conditions. This advanced modeling was also incorporated into the existing fleet of single-engine aircraft. In addition, the ELITE v.4 introduced such things as engine, gear tire and flap sounds; fully functional engine instruments; fuel tank selector switches; and enhanced procedural switches and avionics.

In 1996, Initiative Computing began working with v.5, the first ELITE with photorealistic panels. The ELITE v.5 lets you program systems, instrument and navigational failures. Advanced weather features allow you to control the type and severity of the environmental factors.

Hardware

The only things technically needed to operate ELITE are a mouse and a joystick or yoke. Of course, that would definitely detract from the realism and the ability to achieve the FAA-credible time, but it is possible. A more



reasonable approach would use the Virtual Pilot Pro by CH Products and possibly the CH Pro Pedals. Ports are available on the ELITE Universal Control Interface (UCI) to accommodate the CH hardware. The UCI is an external box that the hardware plugs into before reaching the computer and ELITE (although flight control devices may be attached directly to a gameport, ADB or USB connection). The main purpose of the UCI is to provide high-fidelity analog-to-digital connectivity to the computer and software. The UCI differs from gameports in that it is a serial device that allows asynchronous communication and provides distinct and separate channels for many of the simulation functions.

In other words, it is one of the main reasons that ELITE maintains such a fluid feel in the way it handles and processes the input signals. In addition, ELITE will not run without it. Actually, this is also a very clever way to prevent piracy, although I am sure that was not ELITE's main goal.

Aviation Teachware lent us the ELITE package with the external radio stack that controls all radio and navigation functions within the ELITE program, and they also included the **Cirrus** yoke, rudder pedals and throttle quadrant by **Precision Flight Controls**. All of this hardware together qualifies this particular setup for FAA certification and produces a much more realistic environment than basic "simmer" hardware can.

The ELITE radio stack measures about 7½" W x 13½" H and can be placed on your desk or on top of the throttle quadrant, as I chose. The radio stack contains two Nav/Coms with standbys, ADF, Audio Panel, Transponder, Autopilot, GPS and many other features. When operating any of the external features of the radio stack, those changes are reflected on screen in the simulator. This is very nice—no fumbling with the mouse when you are doing

serious IFR flight. If you are considering using this for Microsoft Flight Simulator, sorry, it won't work. It's too bad, as this would be a handy add-on for FS98 or some of the other available military/civilian simulators.

I will not elaborate much on the Precision Flight Controls yoke, rudder pedals and throttle quadrant (see the *Full Throttle* review elsewhere in this issue). However, I can say this: They are very well made and add an excellent element of realism, especially the rudder pedals. They are the only ones I have used that have the foot pedals in the fully upright position (approx. 70 degrees), as they should be in a real airplane. The good news is that the Cirrus yoke and rudder pedals will work with most military/civilian simulators that require standard gameports.

Software

The ELITE software package v.5.3 requires a minimum configuration of:

- Pentium 133MHz Processor
- Mouse
- 30MB of free disk space
- 32MB of RAM
- 17-inch monitor is recommended for 800 x 600 resolution
- 20-inch monitor is recommended for 1024 x 768 resolution
- Sound card (optional)
- SVGA 16-bit (high color) video card

Recommended:

- Pentium 200MHz Processor
- 64MB of RAM
- Macintosh requires a PowerPC with 32MB RAM

Getting all the hardware setup did take some time and required routing several other cables. Thanks to Fred Zanegood of Aviation Teachware for labeling all of the cables and ports before sending me the package. Fred did such a good job that I told him they should consider labeling all of the cables and ports for easier customer installation. However, ELITE 5.3 was a snap to install. After installation, ELITE setup automatically detects the proper settings for the video card, sound card and COM port. Installation automatically configures each, so you don't have to.

Startup

Once the program is run, ELITE displays a screen portraying all of the available panel/plane combinations. After selecting one of these, you must choose one of the ten regional areas from the Navigational Database. The ELITE panel fills most of the screen. A small window in the upper left corner lets you peek out at the scenery and runways. If you are a person that loves flying around gazing at scenery, then ELITE is probably not for you. However, that is not what ELITE is designed for. ELITE is a serious IFR training device geared for developing and maintaining proficient instrument scanning techniques, as well as providing a highly realistic flight model.

Panels

ELITE's gauges are large, well defined, very realistic and highly accurate. Input/output is smooth, predictable and again, very realistic. It is no surprise to me that the FAA has approved ELITE with the accepted yoke/rudder combination. Every knob and button has a function. No dummy switches or knobs have been placed solely for aesthetic value.

PCATD Personal Computer Aviation Training Device

Credible time as per FAA CFR 61 and CFR 141

Pitch and Power Instruments

Straight and level

Climbs and descents

Standard rate turns

Timed turns.....Credit Hours 1.0

Bank Instruments

Climbing and descending turns

Timed turns-partial panel

Instrument patterns

Aircraft speed and configuration changes.....Credit Hours 1.0

Unusual Maneuvers

Steep Turns

Recovery from unusual attitudes

Partial panel.....Credit Hours 1.0

VOR Navigation

Orientation

Tracking and intercepting radials

VOR intercept patterns

Vacuum instrument failures

Situational awareness.....Credit Hours 1.0

NDB Navigation

Orientation

Tracking and intercepting courses

NDB intercept patterns

Vacuum instrument failures.....Credit Hours 1.0

Holding Patterns

VOR and NDB entries

Intersection holding

Climbs and descents

Partial panel.....Credit Hours 1.0

VOR Approaches

Approaches to selected airports

Missed approaches

Partial panel.....Credit Hours 1.0

NDB Approaches

Approaches to selected airports

Missed approaches

Partial panel.....Credit Hours 1.0

LOC/ILS Approaches

Approaches to selected airports

Missed approaches

Partial panel.....Credit Hours 1.0

Unusual Approaches

BC, DME arc, ASR, PAR, LDA, SDF

Missed approaches

Partial panel.....Credit Hours 1.0

Total credible time toward Instrument Pilot License.....10.0

ELITE Electronic IFR Training Environment

Menus

The menu is accessed from the lower right portion of the cockpit display. I found opening the menu a bit awkward. To keep the menu open, you must click and hold the mouse button down and drag the cursor to the option you want to select. It would seem more user friendly if the menu box would remain open without having to hold the mouse button down.

Meteo

The *weather control page* allows the user to define almost any weather situation he conjures up. This is much more advanced than Microsoft's or Sierra's weather management system. Not only can you set the basic weather functions such as turbulence, wind direction and speed, ceilings, visibility, etc., but by choosing the advanced weather panel, you can fly weather that is dynamically changing. Weather parameters can be defined over time, and the intensity factor is used to configure how fast the changes will occur. All weather situations can be saved and reloaded for any other flight.

Mod

The *map, nav, data, modification* page allows you to create or modify as many as 50 facilities, nav aids, fixes or holding patterns in any of the worldwide navigation databases. You can modify VORs, NDBs, marker beacons, fixes, tracking, holding, runways, lighting, and localizer/glideslopes. And the list goes on. In other words, if anything has changed or you would like to customize the database, or almost anything else in ELITE, the sky is the limit. Modifying any of these options is very easy and straightforward.

Conf

The *Configuration* page covers all the basic program settings and configurations, like your type of hardware, control sensitivities, calibration, weights, sounds, etc. One useful area of configuration is the ability to change instruments in the panel. Although that can be done in FS98 as well, ELITE does not require you to edit a .TXT file. Simply open the instrument configuration box, choose the new instrument and save. Poof, done. ELITE allows many other options for configuring the aircraft and instruments without cumbersome file editing.

Map

The *Map* view displays the area that is loaded, including VORs, NDBs, fixes, markers, airports, runways, holding patterns, localizers, etc., all with appropriate symbols for easy reference. In *Map* view, the user can relocate the aircraft and change altitude, heading and airspeed. You can also re-scale the *Map* view (zoom in, zoom out). Users are able to control the size of the symbols by accessing the *show* button and setting the zoom factor of each item. This is a very nice feature for reducing the clutter in congested areas.

Control

Are you a control freak? Then you will love this menu item. ELITE allows almost total control of anything that could ever happen to you in real flight. Options include individual or combined instrument failures, system failures, engine failures, receiver failures, and the list goes on. Not only that, but you can

create random failures. The beauty of this system is the fact that with version 5.3 and Windows 98, you can set up a second monitor and have another individual or instructor set up emergency failures as you control the aircraft under various levels of problematic flight. This is another very excellent feature.

Conclusion

ELITE is one of the best simulators I have experienced in terms of focusing strictly on total flight model /aircraft system realism. It is totally fluid, accurate with predictable responses, highly configurable and has the ability to practice almost any conceivable approach. As stated before, if you are looking for a graphically intense simulator that allows you to fly over Aunt Martha's house and do a low pass over the cows, then ELITE is not for you. However, if you are interested in becoming a proficient IFR pilot, maintain currency or experience one of the best FAA-certified instrument training systems available, then ELITE is worth a serious look.

For More Information

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Full Throttle Looks At *Jane's WW II Fighters*

*Reviewed by
Rod White*

Jane's Combat Simulations usually comes to mind whenever I think of PC combat simulation developers. For some time now they've been hard at work on a new WW II combat simulation of their own, consulting with ace WW II combat pilots like Col. Bud Anderson, former wingman of the legendary Chuck Yeager. They set out to create a fun combat simulation that was accessible to everyone, from the basic action game enthusiast looking for an adrenaline fix to the hardcore combat simulation devotee, who lives to fly in a target-rich, authentic combat environment. **Jane's WW II Fighters** is the result.

The Graphics

For starters, this is one pretty simulation. It has to use the most advanced graphics engine I've ever seen! They finally put the US Navy Fighters technology to rest when they released *Fighters Anthology* last year. This time they started from scratch with this graphics engine, and it truly shows.

WW II Fighters visually puts you into the cockpit like no other WW II combat simulation does.

There is no 2-D cockpit art in this simulation. The 3-D cockpit art is not only authentic looking, but WW II Fighters has the best looking 3-D cockpit art you'll lay eyes on in a combat simulation currently on the shelves. As you fly the planes from the cockpit view, the stick, throttle and pedals can be seen moving with your inputs.

The amazing visual effects of damage on the inside of the cockpit canopy that this product displays during battle are simply amazing. As an enemy Me-262 buzzed me, filling my plane with lead, my cockpit canopy cracked, smoke and oil splattered everywhere, and not long after my own blood sprayed on the sides of the cockpit canopy!

The graphics engine supports Direct 3D- and 3Dfx Glide-compliant graphics accelerator boards, opening the door to a large install base. These days most gaming enthusiasts have at least a 2-D/3-D Direct 3D-compliant 3-D accelerator board, and many own a

secondary stand-alone solution, like a board from the 3Dfx family of accelerator boards (Voodoo, Voodoo II, Voodoo Rush and Banshee). Running the simulation via Direct 3D, you can reach resolutions as high as your 3-D accelerator board allows, and you can run it as high as 1024x768 in 16-bit color with dual Voodoo II boards.

If you've got the right hardware, this simulation will let you break the 16-bit color barrier, too. Since most of the new next-generation boards driven by the Riva TNT, Matrox G200 or S3 Savage 3D offer support for rendering in 32-bit color, they all should benefit from this capability in WW II Fighters. On a 16MB Canopus Spectra 2500 AGP board, we were able to reach as high as 1280x1024 in 32-bit color under Direct 3D.

Not only does WW II Fighters render damage from the inside of the cockpit, but it also fills the screen with destruction never before seen in a combat simulation! Guns blaze with fire, and the shell casings can be viewed ejecting from the proper places on each aircraft, instead of rendering them dropping magically from under the

Full Throttle Looks At Jane's WWII Fighters

wings in the same spot on every plane, which is how the competition depicts the dropping of shell casings. The actual plane models are a work of art, and the textures they use give them all a flown or war-torn look, which really makes them look more realistic than any of the competition's warplanes.

Damage on the actual planes is depicted in different degrees of intensity. Many stages of damage can be seen on the planes before your plane is hurled to the ground in a blazing fireball, which is just another visual detail that makes playing WW II Fighters so intense. You may shoot a few panels off of a German bomber, then seconds later a wing tip comes twisting end over end towards your plane, next the other wing completely breaks off and the aircraft is sent into a spin of death. In other instances your plane becomes sluggish, almost unflyable, depending upon what's been damaged. In one instance my entire cowl and propeller was sheared off just seconds before my plane was sent down towards the earth as a fireball trailed by smoke and flames. And smoke and flames has never been depicted better in a combat simulation.

Historic Military Aviation Atmosphere

You're also drawn into this simulation by the interface, because they chose to create a WW II military aviation museum atmosphere for the menus and interface throughout WW II Fighters. After you've installed the game and loaded it for the first time, you'll find yourself at the front desk. Above the desk is a *Fly Now* button, taking you directly into an instant-action scenario. Behind the desk you'll find the Info Room, containing in-depth historical information about the Ardennes Offensive and data detailing the Axis and Allied bombers, transports and ground units they used during the operation.



Main menu screen

To the right of the main desk you'll find the War Room. All of the gameplay options reside in the War Room, as well as the seven video interviews with WW II ace pilots like Col. Bud Anderson. In these interviews, each pilot talks about

the aircraft he flew, and three of the interviews are with veteran German Luftwaffe pilots talking about their stick time in the Me-262, FW-190 and Me-109. Actually, they feature an interview for every plane you may fly in WW II Fighters.



War Room menu screen

If you navigate off to the left of the screen from the front desk, you'll enter the Hangar section. Here's where you can really get lost for a while. In the Hangar you'll find all seven of the flyable planes that WW II Fighters offers as fully rendered replicas. Clicking on a plane allows you to investigate it in more detail, and from there you can click on the engine, guns and cockpit for an even closer look. All these up close hotspots feature a fully narrated walk-through of the engine, armament and an amazingly detailed fully rendered cockpit. You can also find video clips of each plane, and you can take any one of the planes up for a test flight by selecting the Jane's control panel positioned in front of every one of planes in the Hangar.



The Hangar screen

The Aircraft

The planes you can fly in WW II Fighters are the P-38J, Me-262A-1A, P-47D, FW 190A-8, P-51D, Spitfire F. IX and the BF 109G-6. The planes they've modeled are planes that



Full Throttle Looks At Jane's WWII Fighters

would have been flown during the Battle of Ardennes, better known as the Battle of the Bulge. They've kept the simulation as historically accurate as possible, and modeling the Battle of Ardennes was pretty original, especially when everyone else is busy recreating the Battle of Britain and scenarios taking place in 1943 and early 1944 in Europe. This scenario takes place at the end of 1944, during the holiday season, just days before Christmas.



A close look at the Spitfire in the Hangar



Peering into the amazingly detailed 3-D cockpit of the Spitfire

The flight modeling can be toned down enough to accommodate the action gamer looking for a quick roller-coaster ride in a target-rich combat environment, and the planes also handle nicely at the highest realism level. However, I don't find the planes in WW II Fighters as challenging to fly as the same planes modeled in Combat Flight Simulator and European Air War. At the highest realism levels in WW II Fighters, the planes don't appear to stall as easily, spin or bleed speed as I expected they would. Jane's also shipped without force-feedback support, which really makes flying WW II Fighters a little less enjoyable than European Air War and Combat Flight Simulator, both of which feature excellent force-feedback support. We were told to expect a patch that will allow WW II Fighters to support force-feedback joysticks, but we weren't given any timeframe or release data detailing when it will surface.



Tank Busting in the P-47D

Simulator Features

WW II Fighters features a wide variety of gameplay features, including excellent multiplayer support. If you have the attention span of an action gamer, you can jump right into the Quick Mission kiosk. From there you can define a few parameters before taking flight, like the pilot skill level, number of planes in each flight, the type of planes in each flight, the weapons load-out of each aircraft, starting altitude, time of day, cloud layer, separation distance, etc.

The Single Mission kiosk allows you to fly any of the 20 Allied missions, the 15 Axis missions or the Training missions for either side. The Campaign kiosk allows you to play through the Battle of Ardennes campaign scenario from both the Axis and Allied sides, beginning on December 16th, 1944. Unfortunately, it's not a dynamic campaign scenario, but the scripted missions are a great deal of fun to play through and you'll always find more than enough planes and ground targets to shoot at in each one. From time to time you can even spot a deer darting across the runway!

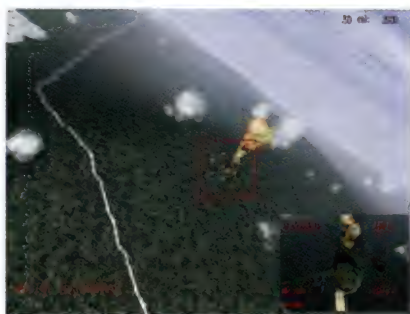
If that's not enough ways to play the simulation solo or if you find that you've played through the simulation already, you can always jump into the Mission Builder and create your own missions. This tool allows you to create just about any scenario imaginable with all of the objects, planes and structures found in WW II Fighters. It also gives you the capability to simply download missions other users have made, because from the Single Mission kiosk you can load missions designed with the Mission Builder! The Mission Builder isn't quite as powerful as the one you get with Jane's F-15, but this one isn't nearly as complex or hard to use at the one that they give you with F-15, either.

WW II Fighters really rocks as a multiplayer game, because it features cooperative multiplayer support for any of the Single Missions, even those created with the Mission Builder! If you'd rather go head-to-head with other players, you can do that as well. On the down side, Jane's has ignored modem and serial-play completely, because options are only provided for Internet, which is TCP/IP over the Internet by connecting to other players' IP address, or LAN play, which

Full Throttle Looks At Jane's WWII Fighters



Smoking an Me-262 in the Spitfire F.IX



Going head-to-head with an Me-262A



Example of a flak attack

uses IPX/SPX protocol for playing over a local area network. However, they do include one more way to play WW II Fighters over the Internet.

If you'd rather not fool around with finding someone to play with, then manually connecting each other over the Internet, IP address to IP address, you can always load your Internet browser and head over to Janescombat.net. There you can play WW II Fighters for free with other players from around the world. It features Internet chat rooms, and you don't have to do a thing to get each other connected aside from clicking *Fly* from one of the game slots once everyone has agreed to play. Best of all, it's free, and it's really smooth and playable with two to four players. Once you try getting eight players together at once, the performance takes a bit of a nosedive, but it's a lot of fun with just two players engaging the enemy artificial intelligence (AI) in a cooperative multiplayer mission, and head-to-head dogfighting is a blast just the same with three or four players.

The options for fine tuning the gameplay (to suit an action gamer or the most hard-core combat simulation enthusiast) make it a very scalable combat simulation that's accessible for all breeds of PC gaming enthusiasts.

Documentation

When it came time to dig into the manual, I was bit disappointed with what I found. Jane's is known for delivering thick, ring-bound manuals filled with loads of data and information about their simulations. You'll find a ring-bound manual in the box, but it only features a little under 100 pages, and it doesn't really cover much about the actual gameplay.

Jane's did include what they call the "Official Play Guide," which is a pamphlet with little over 20 pages worth of information detailing what it takes to get started and what each section of the interface offers. However, both it and the manual are a bit of a let down if you're expecting the kind of documentation they provided with Longbow 2, F-15 and Fighters Anthology. However, they do provide a fantastic

keyboard reference card detailing all of the keystrokes needed to get the most out of the simulation, so the documentation isn't a complete let down.

Conclusion

After looking at all of the WW II combat simulations on the shelves today, it becomes clear that there's no perfect WW II combat simulation featuring everything we want in one box. They each feature something that another one doesn't. What Jane's does best is offer the most outstanding graphics engine of the them all, with visual special effects that will make your jaw drop the first time you smoke a bandit. They also draw you deeply into the simulation with an amazing WW II aviation museum interface, featuring enough historical data, videos and interviews to please any serious WW II aviation lover.

I also have to say that WW II Fighters might very well be the most fun to play of all the WW II combat simulation on the shelves. It does a fantastic job at dropping you right into the thick of things, by surrounding you with all of the eye candy one could ever dream of finding in a combat simulation. At the same time, it provides excellent seat-of-the-pants dogfighting action that any PC gaming enthusiast looking for a thrill can enjoy. It can also be said that WW II Fighters features the most cunning AI combat pilots. Even a seasoned veteran virtual combat pilot like myself found WW II Fighters to be one of the most challenging combat simulations I've flown in a long time, once the AI skill level settings were cranked up.

They won't win any awards for documentation, and some may question the flight modeling at the highest realism settings. But one thing is certain: it's the prettiest simulation on the shelves. You can play it over the Internet for free over Janescombat.net with bloodthirsty combat pilots from around the globe 24 hours a day, seven days a week. Recreating the Battle of Ardennes was a pretty original concept when everyone else was busy modeling the Battle of Britain and other conflicts over Europe earlier on in the



Full Throttle Looks At Jane's WWII Fighters

war. This is without a doubt the only combat simulation that anyone with an itchy trigger finger can jump into and find something that will draw him into it.

And if you find that you've completed the campaigns and flown all of the missions, you can always fall back on the Mission Builder to start making your own WW II combat scenarios. We also have a notion that Jane's is already working on an expansion disk, because just about every product they've ever released had one.

This title comes from the San Mateo division of Jane's, which is the same group responsible for creating US Navy Fighters, then Marine Fighters; Advanced Tactical Fighters, then NATO Fighters. So, we have a notion that history will repeat itself, and we hope to see a Pacific theatre expansion disk for WW II Fighters with more planes to fly and new conflicts to take part in



The FW 190A-8 taking out B-17s



A FW-190A-8 shot down in flames

not far in the future. If you enjoy WW II military aviation simulations, WW II Fighters is one not to be overlooked.

For More Information

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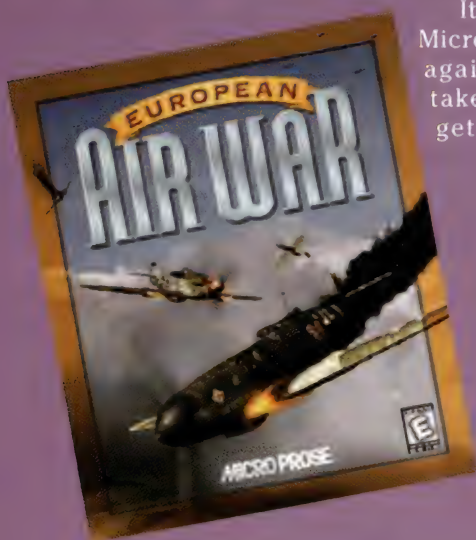
European Air War

If there was one prop-driven WW II combat simulation I liked more than any other back in the early '90s, it was without a doubt 1942 Pacific Air War (PAW). Sure, Dynamix had Aces over Europe and Aces over the Pacific, but only PAW captured my attention. Maybe it was the head-to-head modem support or the ability to jump in and fly the Japanese Zeros, but whatever the reason, PAW is a title most diehard combat simulation enthusiasts consider the Falcon 3.0 of WW II combat simulations.

It's now 1998, and Microprose is back at it again. It may have taken them years to get it together, but

European Air War (EAW) is not only a fantastic sequel, it also has what it takes to stand out in a crowded and competitive market, just as PAW did years ago.

It's hard to figure out where to start reviewing this simulation, because there's so much ground to cover. I'll start with the planes. Most of the competition offers seven to nine planes in detail, but EAW features a whopping 20! That's right, they give you the reigns of 20 realistically modeled warplanes to fly. This doesn't include the artificial intelligence (AI) controlled aircraft, like the bombers and support planes you'll encounter during missions in European Air War.



**Reviewed by
Rod White**



The main menu in European Air War



Mission headquarters and debriefing



The Aircraft

You can fly the P-51D, P-51B, P-38J, P-38H, P-47D and the P-47C as a pilot for the USAAF. As an RAF pilot, you can control the Spitfire XIV-E, Spitfire IX-C, Spitfire I-A, Hurricane I, Tempest V and the Typhoon IB.

As a German, you can shoot down RAF and USAAF pilots from the Fw 190D-9, Fw 190A-8, Bf 110G-2, Bf 110C-4, Bf 109E-4, Bf 109G-6, Bf 109K-4 and the rocket-powered Me-262.

The Simulator

This simulation is so fun because you can play it from different perspectives. Having the RAF, USAAF and Luftwaffe pilots' perspectives as an option gives the simulation a superb replay value. The dynamically driven campaign scenarios give it an even more unbeatable unlimited replay value that is hard to match.

European Air War features campaign scenarios recreating the Battle of Britain (1940), European Theatre (1943) and the European Theatre in 1944. Although you won't change the outcome of the war, you'll certainly enjoy feeling like your efforts have made a difference. To keep things historically accurate in the Battle of Britain campaign, they only allow you to play as a RAF or Luftwaffe

pilot, since the USAAF had no part in the actual conflict. In the Europe 1943 and 1944 campaigns, you can choose to fly as a Luftwaffe, USAAF or RAF pilot.

You can choose your rank before starting Career Mode or you can earn it by collecting awards and getting promotions on your own. In EAW, rank dictates how much control you have over the other allied aircraft in the skies around you during missions. As a Squadron Commander or Wing Commander, you have much more control over the other aircraft in your wing or squadron. If your rank is high enough, you can command multiple wings of aircraft during battle. As an inexperienced greenhorn, you'll only have the ability to command a single wingman.

Sounds and Communication

The communications structure is deep, too; the radio waves are filled with all kinds of chatter during missions. If you're not careful and you fly too far from the

European Air War



bombers you're escorting, they'll cry out for your help. If you're in the thick of things, you may hear your wingman notifying you of a bandit on your six.

It is a very immersive sounding simulation in and out of the cockpit, because the engine and gun sound effects are superb! The 50-caliber cannons and 20-caliber machine guns sound just as they should, and the sound of enemies riddling your aircraft with lead is simply amazing. You can actually hear the sound of metal hitting metal, and it's very convincing, because it doesn't sound as if you are in a tin can being pelted by a BB gun.

During mission briefings you'll notice a voice speaking with a British accent if you're flying for the RAF or a German speaking voice when flying for the Luftwaffe, with subtitles underneath. The same is true in flight, because during combat your wingman will speak with a British accent or in German with subtitles, depending on for whom you're flying.

Another sound that really impressed me was how you could actually hear the planes pick up speed in a steep dive! You gradually hear the planes going faster and faster

as you dive on unsuspecting bombers. This is a feature I don't recall seeing in any of the other WW II combat simulations on the shelves today. If the immersive sound effects don't draw you in, the graphics most certainly will.

3-D Graphics

Digging into the configuration menu, you'll find graphic options for Software, Direct 3-D and 3Dfx Glide rendering. The simulation supports the two most popular standards: Direct 3-D and 3Dfx Glide. If you have a 3Dfx Voodoo or Voodoo II board, you can choose the Glide support. We have found that it runs just as well under Direct 3-D on a Voodoo II board, and we also tried it on AGP Spectra 2500 boards with 16MB of RAM powered by the nVidia TNT chipset with remarkable results, too.

Since the simulation does offer both D3D and 3Dfx Glide support, it doesn't take a 3Dfx card to get the most out of it. Many of the new 2-D/3-D solutions like the TNT, G200 and 3Dfx Banshee-driven products look great and run nicely via Direct 3D. In some cases, boards driven by the nVidia TNT can match (if not exceed) the performance of a Voodoo II board.

I've found that to be true in EAW with our TNT-driven Spectra 2500 board, because it was able to run the EAW nicely with full-blown detail levels on a PII 350MHz machine. This matches the Voodoo II in terms of performance while looking just as good, if not better, than it does when running on a Voodoo II board.

The only visual limitation is that the resolution doesn't break the 640x 480 barrier, but it does look so fantastic at 640x480 that most players won't miss higher resolution support. Don't let the lack of higher resolution support disappoint you, because the 3-D cockpit art almost matches what you'll find in WW II Fighters. Although the 2-D cockpit art in MS Combat Flight Simulator beats them all, the 2-D cockpit art in EAW is nice and appealing to the eye with a more hand-drawn look, as opposed to the photo-realistic look MS Combat Flight Simulator's 2-D cockpit art sports. It also makes the transition between 2-D-cockpit and 3-D-cockpit modes almost seamless.

The Scenery

Some may argue that the terrain in European Air War is flat, but what you'd be flying over in the real world is flat in those areas too. I've flown far enough out and ran into mountains where mountains should be, so I have no major complaints about the terrain in European Air War. I must admit that overall the color palette looks a bit limited, but the cartoon or hand-drawn look they've given it does the game justice, because the game looks like a fully animated, fine WW II aviation print.

European Air War

*(Below and right)
Two examples of
Luftwaffe aircraft*



Microsoft's Combat Flight Simulator may be slightly more realistic in the actual flight modeling at the highest realism settings, but it's hard to say for certain. The force feedback effects in European Air War make it feel better than Combat Flight Simulator, due to the force feedback effects that European Air War features that Combat Flight Simulator doesn't. It's safe to say the European Air War features top-notch flight modeling with a richer implementation of force-feedback effects that convey a more realistic flight than Combat Flight Simulator.

Aside from the campaigns, you can select Single Mission mode. Here you can dynamically generate one of a possible 300+ missions by selecting from a list. Variables include what plane you'll fly, what other allied planes will be in the air with you, what the enemy planes will be, how smart the AI is, the time of day, from where you take off and where the target area is.

It's actually one of the most feature-rich Single Mission generators I've ever seen. I believe I spent more time here than in the campaigns when I first got the simulation, because it was just so much fun to pick and choose the settings and generate the mission I wanted to fly.

Combat

Once you've really dug into the game, you'll be enjoying fantastic seat-of-the-pants action when you encounter your first massive battle. When I say massive, I mean massive. Micropulse claims European Air War can model up to 256 planes in the sky simultaneously. I can't say I've seen that many at once, but most of the earlier encounters in the campaigns feature at least 50-60 fighters and bombers in the air all at once, which is really a sight to see. Chaos is the best way to describe it, but in a WW II combat simulation with that many planes in the air all at once, chaos becomes a very fun and challenging setting to be in.

The flight modeling is top-notch in European Air War, too. You can fine tune this to your liking in the configuration menu, making it simplistic for a novice or less seasoned combat simulation enthusiast or as hard-core as you like by cranking the realism options to the limit. Spins and stalls are modeled nicely, and it just feels right when flying with a force-feedback joystick.



*(Above)
Example of the
excellent ground
texturing*

*(Left)
Battle at dusk with
superb color effects*

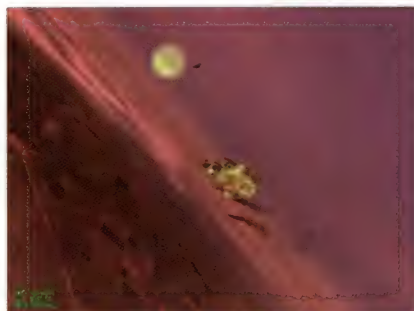
Multi-player

Multi-player options are also a part of the package. They provide IPX LAN, Modem, Serial and Internet play options. Best of all, they do offer cooperative support for the Single Missions, giving you an almost endless number of missions to fly cooperatively. Cooperative play works best over a LAN, but the sim slows down a lot over the Internet or



*(Above)
USAAF P-38
Lightning*

*(Right)
Realistic 3-D
ground objects and
shadows*



European Air War

via modem once a large number of AI planes appear on the screen. It's so bad that performance drops to slideshow speed. It appears the simulation works best over the Internet or via modem in head-to-head encounters that don't include very many planes in the air at once. Cooperative multi-player support worked best over a LAN, due to the speed of the connection. On the MSN Internet Gaming Zone you can find support for European Air War, but it's not as smooth as Combat Flight Simulator or WW II Fighters over Janescombat.net, and it's not much faster than it was outside of the MSN Internet Gaming Zone connecting IP address to IP address on our own.

Conclusion

You just can't find a more feature-rich WWII combat simulation than European Air War. Okay, so WW II Fighters has a more advanced graphics engine, and Combat Flight Simulator features an unmatched level of expandability, because it can accept terrain and aircraft made for Flight Simulator 98. But both it and WW II Fighters don't model 20 planes right out of the box, they don't feature dynamic campaigns or as many force-feedback effects, and they don't render as many planes in the air all at once, like European Air War does. Even EAW's

communication system is far more advanced than what you'll find in the competition's WWII combat simulations. If that's not enough, the interface greets you right away with nostalgic WWII-era sights and sounds.

I just can't say that there's a WW II combat simulation on the shelves today that's more immersive than European Air War. It's also an accessible simulation for a novice, while offering the ability to accommodate the hard-core combat simulation enthusiast looking for realism in flight and damage modeling. All in all, Microprose puts their name back on the map as serious combat simulation developers with this one. I am hard pressed to find a WW II combat simulation that has been able to draw me into it more than European Air War has.

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Some more examples of European Air War "action"



Preview of Flight Unlimited III

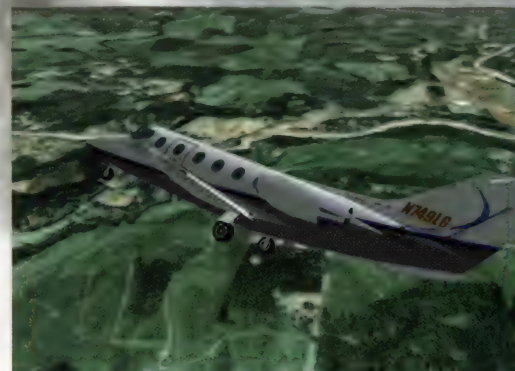
By Peter James

It's a very exciting Christmas season for us all. With so many new flight simulations entering the market, people like "us" must be smiling happily once again—our hobby has been very good to us in the last few Christmas seasons. As of this writing, I don't know what will be out by Christmas, but as head of the design team for Looking Glass's latest civilian flight simulation project, let me try to enlighten those who are curious.

Flight Unlimited III (FU III) will be a fresh new version of the popular **Flight Unlimited II** (FU II). We are striving to build the **Flight Unlimited** line into a franchise that will continue to remain on the cutting edge of technology and graphics for years to come. We are not approaching this as "just another upgrade." **Flight Unlimited III** will be Looking Glass Studios's most comprehensive general aviation simulator produced to date, offering several key new features. These include a new and improved state-of-the-art weather system, an enhanced rendering engine supporting 16-bit color, moving ground objects and persistent aircraft. We will also extend gameplay by adding a wide mix of new

aircraft and a major new metropolitan area over which to fly, with even more detail than **Flight II**.

We hope that **FU III**'s new features are going to take the civilian flight sim genre to a new level of realism. As you may know, Seattle is the new flight region. We chose this region based on several factors, including input from our user surveys. We wanted a region that was rich in scenery, elevated terrain and bodies of water. Also, we wanted a geographical area with at least one major international airport, a large urban area and an assortment of smaller, non-controlled airfields out in the country. After visiting Seattle first hand, I can tell you the beauty of the city, surrounded by water and alpine terrain, is a sight to behold. In our flight area, you can virtually visit all these areas. Seattle also



The Beechjet 400 in Flight Unlimited III



Dramatically detailed elevated terrain

The author of this article, Peter James, is the product manager behind Flight Unlimited III.

Preview of Flight Unlimited III



The Lake Renegade 270 Turbo Seaplane in Flight Unlimited III



Night lighted interior of Beechjet 400

has a climate that fits well with our new weather system. Seasonal changes are more noticeable here and will be reflected in our new atmospheric model, as will the inherently dynamic nature of the atmospheric conditions of the Pacific Northwest.

Our new Seattle scenery is far more detailed than the one in FU II. In places, our standard four-meters-per-pixel resolution will increase to one meter per pixel—the sharpest of any real-world simulation. Using real satellite data, the Flight Unlimited III team puts in months of time touching up the data so it is nearly perfect. We don't want the feeling of immersion spoiled by a seam running down the middle of our terrain. We want to give our users the best possible level of realism that we know how to create.

Flight Unlimited III will feature our most detailed, accurately designed aircraft to date. I've personally scrutinized the visual models, so purists like myself will know that all sections of the aircraft are to scale and accurately portray the appearance of the real aircraft. We are also working with many of the aircraft manufacturers to assure we have all the correct specifications of each aircraft, including the flight models. These new flight models will really satisfy my own greedy demands for physical accuracy. As a flight instructor, I hope real students can benefit from what we have created and transfer their skills into the real cockpit. I know I have. We've also been working closely with other pilots that have experience in the real-world counterparts. Each aircraft will feature 100% real-life sounds, interactive virtual cockpits, detailed interiors and smells. Well, okay, maybe not smells...yet!

What airplanes are we going to have? This may be the very first time we have unwrapped our new hangar to the public. In addition to the enhanced FU II originals, we have selected the Stemme S10-VT turbo-charged Motorglider, the Lake Renegade 270 Turbo Seaplane, The Velocity Elite XL experimental, the Mooney TLS Bravo and the Beechjet 400A.

Will the famous raindrops in FU II be left out of FU III? No way! In fact, they will be wetter, louder and "splattier" than before! You're gonna get soaked! Our weather system will take the flight sim world by storm. Weather is a key element in aviation. It wouldn't be a true flight sim without it. So, we are concentrating a good amount of effort to bring our users the most

realistic weather conditions for flying that we possibly can.

The FU III air traffic controllers went through some additional training, as did our artificial intelligence aircraft. The world will be more dynamic, more alive and, hopefully, more realistic. It will support IFR flying from the beginning of a flight and offer more user options. Other improvements include ADFs, autopilots and landing lights. It is our goal to make the entire experience educational, accurate and pure fun.

The new interface will have the same "ease of use" incorporated in FU II. You're just seconds away from a "quick flight." You will of course have the options to tweak as much as you like, tailoring your computer for all your flight sessions.

We're working hard to make Flight Unlimited III the most immersive civilian flight simulation ever. What comes to my mind is the pure feel and visual joy that flying provides. Starting from the already successful look and feel of Flight Unlimited and FU II, our goal is to improve even more on this experience. If we can provide you with the visuals, the sounds and the interactivity of flying, we've done our job. Through practice you will learn to fly each aircraft and have the satisfaction knowing that you're learning how to fly the real thing!

If you're a user of FU II and enjoy it for the little details that make it special, you're in for a treat with Flight Unlimited III.

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Combat flight simulator from Microprose

A Look At Falcon 4.0

Reviewed by
Rod White

Hell has officially frozen over! It's been a very long time in the making, and over the years I've even doubted that this title would surface before the year 2000. But after being in the works for at least four long years now, I'm happy to say that **Falcon 4.0** has finally landed on store shelves!

The first edition of any complex combat simulation is usually the one with the most flaws or bugs. To give something back to the users who are willing to take a chance and purchase this first version, Microprose has put together a very special Squadron Leader Special Edition Binder version of Falcon 4.0. Only 200,000 of these Squadron Leader Special Edition Binder versions will ship. Instead of a box, the entire simulation is encased in a shrink-wrapped three-ring binder, containing a fantastic 550-page manual (we'll dig into that more later), a fold-out map of Korea detailing airbases and targets, the Cadet's Guide (beginners guide), Communications Handbook (for multiplayer gaming), a quick-reference keycard and a set of divider cards for separating the various sections of the massive work of art they call the manual.



Spot view of the F-16 Falcon

You can't judge Falcon 4.0 by the demo that's out there. A while back Microprose released a demo for Falcon 4.0, but it wasn't even alpha code. Since that demo, they've almost entirely redone the graphics, so don't judge this finished product by the ancient demo.

The graphics in Falcon 4.0 in some ways redefine the standard for cockpit art in modern jet-driven combat simulations. I've flown the high-end F-16 simulators down at Lockheed Tactical Aircraft Systems in Ft. Worth, Texas. For those of you who aren't aware of TAS, it's the old

A Look At Falcon 4.0

General Dynamics plant that first built the F-16 before Lockheed purchased General Dynamics. After having flown those simulators, I can say that the cockpit art in Falcon 4.0 is an excellent reproduction of the cockpits in the high-end simulators. It's that defined and detailed, and in 2-D cockpit mode you can even manipulate many of the switches and dials in the cockpit! Better yet, if you crank the details up, you'll even see your helmet reflecting in the cockpit canopy.



3-D cockpit detail

Graphics and system requirements

The graphics engine in Falcon 4.0 defaults to 640x480 and 800x600 graphics resolutions, but if you dig into the ReadMe file you'll find command line parameters to access 1024x768, 1280x1024 and 1600x1200 resolutions. I don't recommend running it at those resolutions even if you do have a PII 450-MHz rig. Microprose was looking to the future when they designed Falcon 4.0. Although the game looks good today, no current machines can handle its advanced resolutions and detail settings when these are set to the maximums.

I have also run Falcon 4.0 via Direct 3D on my AGP graphics TNT-driven 16MB Spectra 2500 board. It ran nicely on my TNT board, but I have to tone down some detail levels. The simulation supports Direct 3D and 3Dfx Glide compliant 3-D-accelerator boards, and it runs best on Voodoo II, 3Dfx Banshee and TNT boards. However, you can get by with a Voodoo I or 3Dfx Banshee-based card as well. With a Voodoo I board, you'll need to reduce the detail levels even more, because the Voodoo I doesn't have the on-board texture memory that the 3Dfx Banshee, 3Dfx Voodoo II or Riva TNT-driven boards have.

In a recent interview, Gilman Louie (Chairman of Microprose and the Executive Producer of Falcon 4.0) told me that Falcon 4.0 will use as much RAM as you have, even beyond 128 MB! With 64 MB of RAM installed on my PII 350-MHz machine, I've noticed pausing when switching views. I am seriously considering the jump to 128 MB (or more) of RAM, since RAM is a lot more affordable than it was back when Falcon 3.0 was the hottest thing in combat simulations. If you already have a hot PII-class system with a decent AGP graphics card based on the TNT or 3Dfx Banshee technology, RAM is the only enhancement that you can make to improve performance of Falcon 4.0, aside from a CPU upgrade. This will allow a higher level of detail, without the pausing. Microprose recommends a PII 450 MHz with 128 MB of RAM for hot performance. I've been able to get by on a PII 350-MHz machine nicely, with a few details turned down, and others I'm sure will find that they can run Falcon 4.0 acceptably on their slower machines, but with less detail.

Campaigns and missions

Actually, the campaign missions are what really puts a strain on your machine. In Falcon 4.0, the campaigns feature both an air war and a ground war running at the same time in real-time! They had a hard-core strategy gamer create the ground war for Falcon 4.0. Then the engineers looked at how DOD contractors interface an air war with a ground war for the high-end DOD and military combat flight simulators, and the end product is Falcon 4.0's fully dynamic campaign system.

There's truly nothing like it in an off-the-shelf PC combat simulation. Even DID's Total Air War doesn't come close to the real-time, fully dynamic campaign that Falcon 4.0 features. Any given mission can have from 50 to 200,000 combatants in the scenario at once! Of course, they execute some unique tricks to pull it all off, but you really have the sense that you're one tiny man in a single F-16, in the middle of a great big war zone when flying a mission in Falcon 4.0. It's not uncommon to see F-4 Phantoms bombing ground targets off to your right as you reach steer-point 3, where A-10 Warthogs are pounding Korean tanks into oblivion, or to see explosions from ground structures being hit 5-10 miles ahead of you in a typical Falcon 4.0 campaign mission.



Avionics and instrument display



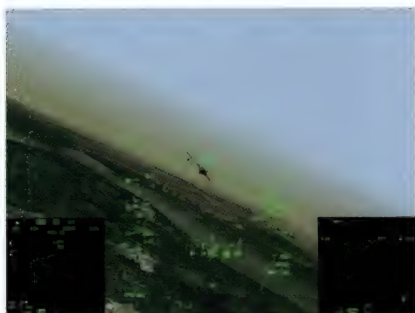
Ground details and targets

A Look At Falcon 4.0

It's really an engrossing experience to just sit back and watch the war happening all around you while Combat Autopilot flies the plane. You can actually sit back and do just that by pressing the **[Shift]** and **[~]** keys at the same time to view what they call the Action Camera view. You'll see F/A-18s engaging MiG-25s, Su-27s shooting down F-16s, A-10s pounding tanks, even tanks fighting tanks and other ground units. Mi-24 Hinds engage other allied aircraft and UH-60 Black Hawks and Apache helicopters do their thing in this busy and frantic combat environment, which plays out completely in real time. It's nice that they actually let you see the entire air and ground war taking place, instead of just reading about it in briefings and debriefing reports.



B-52 on a bomb run



Targeting an enemy aircraft



F-4 Phantom

You choose from three campaign scenarios. All three take place in Korea and are fully dynamic. The first campaign is called Operation Tiger Spirit. The second campaign is Operation Rolling Fire, and the third is Operation Iron Fortress. The first two campaigns are

challenging, but the third campaign is by far the toughest. It begins with the North Korean forces occupying all but a small portion of the Korean peninsula, leaving your forces with a ridiculously tiny portion of land to defend at the bottom. Starting a campaign requires selecting a fighter squadron, then committing to the campaign. Once you do so you'll find yourself in the Mission Schedule interface. This is really where you'll first be wowed by the magnitude of a fully dynamic campaign taking place in real-time.

On the left side of the screen is the frag order menu. Here you'll see every mission taking place, getting ready to take place or ending in the campaign, all of which you can join at any time (excepting missions that have been completed). In the top-right corner of the screen is a clock that operates in real-time, but you have the option of speeding up time as fast as 64x or stopping it via a pull-down menu. Under the clock is a map of the Korean peninsula showing the operations being conducted, with small reports off to the side stating just what is going on. You can even pick the type of mission you'll be flying every time you play. Mission types include Interdiction, OCA Strike, Deep Strike, CAP, BARCAP, SEAD Strike, Naval Strike, Sweep, BAI, SEAD Escort and that's just a few of them!

After selecting the type of mission you'll be flying, you can dig into the briefing, flight plan and munitions menus to find out what you're doing, where you're going and what you're taking with you to get the job done. You can even move steer-points around and change your aircraft's load-out before taking flight. All of the missions displayed in the frag order window are sorted by time. So, if there's a mission you really want to fly, you can always take an earlier mission. Just complete it and make it back in time to fly the one you really wanted to fly, or you can just speed up time until the mission you want to fly is ready for launch. You also have the option of taxiing or starting right on the runway before every mission, and you can place yourself in the wing leader or any of the available wingman slots.

Instant action

Although the campaign is where the most intense part of this simulation takes place, it's not the only gameplay feature offered. The Instant Action feature allows you to pick a spot anywhere on the Korean peninsula to fly a mission, and the time of day. Then select a Fighter Sweep or Moving Mud mission (air-to-air or air-to-ground, respectively), the strength of the enemy artificial intelligence (AI) and if SAM and AAA defenses are enabled. You can spend hours in Instant Action, and I highly recommend getting your feet wet in the Instant Action section before taking on a campaign.

A Look At Falcon 4.0

The Tactical Engagement section contains 31 training missions teaching you everything you need to know about flying the F-16, from basic flight to head on BFM. You'll also find the Mission Builder if you select New under the Saved option. They buried it pretty well, but with this very powerful tool you can edit missions or create your own from scratch. When you combine the fully dynamic campaigns with the mission builder, there's just no question that Falcon 4.0 is truly the most re-playable combat simulation that money can buy. If get tired of flying the campaigns, and you won't, you can always create your own in-depth solo combat missions with the builder for a change of pace!

Selecting Tactical Reference allows you to dig into information about every one of the aircraft, vehicles and munitions found in Falcon 4.0. I highly recommend reading up on the adversary aircraft in this section. Each page includes a small speaker button at the bottom allowing you to listen to the distinctive radar tones you'll hear in the cockpit of your F-16 when the enemy has you in their sights. The Comms and Dogfight sections are used for multiplayer gaming, with options provided for TCP/IP LAN and Internet play, and modem and serial connections. You can say the Dogfight section is somewhat the equivalent of Instant Action, but you can also setup dogfighting scenarios for solo play by substituting users with AI fighter planes if you want to practice offline.

Multiplayer

Four unique paint-jobs are also included for multiplayer mayhem: Tiger, Shark, USA and Crimson. Unfortunately, the Internet multiplayer features are not rock-solid right out of the box. Getting a campaign running with just two players is an exercise in patience, but we're told that Microprose is aware of these issues and Falcon 4.0 will see a few updates, the first of which will address multiplayer performance and the bugs they've found since it hit store shelves.

Documentation

Falcon 4.0 has set a new standard for what a manual should offer. It's one big, impressive, ring-bound manual, featuring 550 pages of valuable information. Pete "Boomer" Bonanni, the F-16 instructor pilot known for the Art of the Kill book and video that was included with Falcon 3.0 Gold, is responsible for writing portions of this manual and for providing information to the development team, allowing them to realistically model the F-16C Block 50/52 aircraft.

Flight model

If you're looking for a challenge, just crank the realism settings to maximum. In Falcon 4.0, they've done an outstanding job of modeling the F-16C's flight model and avionics suite. All of the radar modes for air-to-air and air-to-ground tasks are here, too. Everything is authentic, right down to the tone of the Sidewinder's growl. It's also accessible for novice pilots, and they do include the Cadet's Guide to help newbies, but this really isn't even close to being the kind of simulation you can dumb down enough to make an action game of it. It's just too serious to be that simplistic.



F-16 Falcon deploying speed brakes

Adjustable simulation intensity

I highly recommend Falcon 4.0 to a simulation enthusiast willing to learn what it takes to become a hard-core combat simulation pilot. Using the manual, training missions, unlimited ammo and invulnerability toggles, combined with the means to tone down the flight and avionics realism, a mainstream combat simulation enthusiast can also successfully fly this hard-core combat simulation. They can find just what they need in Falcon 4.0 to learn the ropes. There's even an ACMI system feature that allows you to record missions and replay them later for analysis from various angles.

In the Setup menu you'll notice that all of the detail sliders range from 1-5, but with another special command line parameter, you can access settings as high as 10. But again, these options are intended for machines that don't exist today. If you run a PII-350 MHz rig, you will want to turn a few details down at 800x600 running dual 12-MB Voodoo II boards, which both run at a 100-MHz memory clock, just to get acceptable performance.

A Look At Falcon 4.0



Main menu



Mission menu

Many graphics options sliders are provided, so you can tone the details down to accommodate a well-equipped 200-MHz MMX machine with a 3Dfx Voodoo I board, but it won't look quite as pretty or play as smoothly as it does on a Pentium II machine. I'm sorry to say it, but you really need a very fast Pentium II-class machine to get the most out of this product. I recommend *at least* a PII 300 MHz as a starting point for decent performance, plus a fast, defragmented hard-drive large enough for the full 450-MB installation, a large swap file and 128 MB of RAM.

Conclusion

A few things could have been done better in Falcon 4.0, like the enemy and allied aircraft and ground units, because visually they don't look as polished as the F-16 you get to fly. It's also a performance hog, but by reducing detail levels and having a good 3-D-accelerator board, performance is acceptable, and you'll have a simulation that will be even more fantastic once you upgrade to a bigger and better machine (as we all do eventually). And this is the first version, so a bunch of little issues still need to be addressed, but none of them are showstoppers.

Since the simulation hit store shelves, Microprose/Hasbro Interactive has done a fine job supporting the product online and in various forums around the Web.

By the time you read this review, at least one patch should have been released, with more to follow, and they have even bigger plans for Falcon 4.0, because MiG-29 Fulcrum and F/A-18 Hornet expansion packs are slated for release late next year.

Falcon 4.0 was well worth the wait, but you couldn't have told me that while I was waiting for it. It took almost forever, and many of us thought it would never happen, but I'm glad they proved us wrong. Now we're rewarded with a combat simulation that sets many new standards for modern military combat flight simulations. I could go on for another two or three pages offering more details about the campaigns, flight modeling, avionics and terrain graphics that Falcon 4.0 features. But I'll end here by stating that if there's one jet-driven, modern military combat simulation you plan to purchase in the next 30 days, don't cheat yourself out of the most intense combat simulation experience ever. Run, don't walk, to your local software retailer and get a copy of Falcon 4.0 before all 200,000 of the Squadron Leader Special Edition Binder versions are gone.



High resolution terrain detail



F-16 flying over snowy terrain

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Product Reviews

Reviewed In This Issue Are:

MegaScenery Pacific Northwest

Red Baron 3-D

Comm 1

The Intensor

Precision Flight Controls...Cirrus Yoke and Rudder

MegaScenery Pacific Northwest

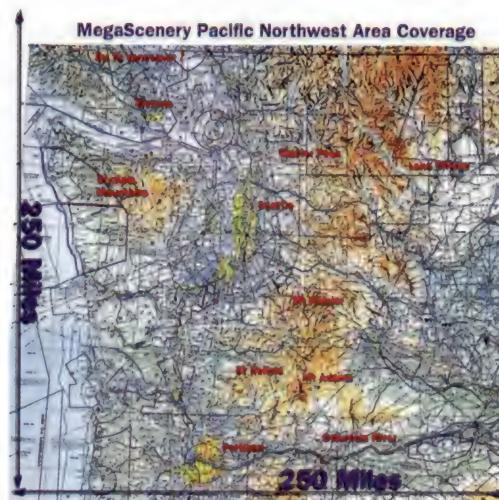
Scott M. Slaughter

Read virtually any travel or vacation information and you'll likely find that the Pacific Northwest area of the U.S. has some of the most beautiful scenery, including mountains, rivers and lakes in North America. If you have ever visited the area you would probably agree. Even if you've never been to the Pacific Northwest, you can go there now courtesy of MegaScenery USA 98 from PC Aviator.

Maybe you've already heard or read about MegaScenery USA 98 from PC Aviator. Pacific Northwest (PNW) is the first title in their MegaScenery USA 98 series and is the subject of this review. By using the MegaScenery, you can soar within a few feet of the most familiar scenery in the Pacific Northwest. This includes famous mountains such as Mt. Rainier, Mt. Adams, Mt. Hood the Wenatchee and Okanogan Mountain range. You can even explore the hundreds of square miles of debris remaining around Mt.

St. Helens after it blew its top in 1981 (complete with the crater). Fly over hundreds of miles of the Columbia River, the western coastline and Lake Chelan.

Although the mountain and lake scenery is impressive, you can also do some city flying. Fly around Seattle, Portland and Vancouver (BC).

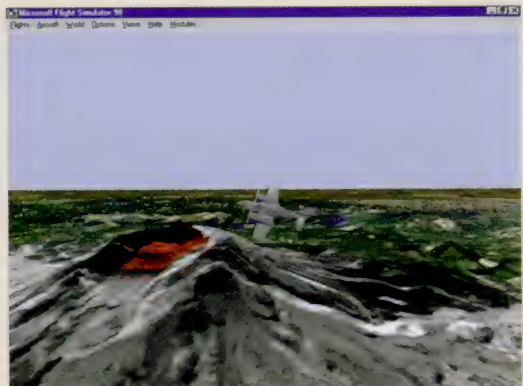


Pacific Northwest recreates over 75,000 square miles of Washington, northern Oregon and southern British Columbia.

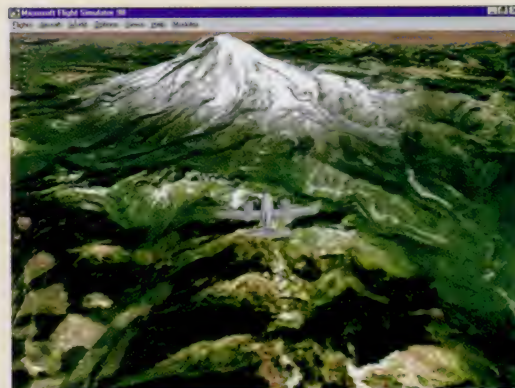
Installation information

Before going much further with my review, I need to warn you about a few items. The first concerns the time required to install the program. Plan for about 20 minutes for the normal install and much longer — nearly an hour — for the full installation. Another item is the sheer number of files that will appear on your hard drive. A normal installation of PNW will put over 5,100 files on your hard drive. A full installation puts an astonishing 11,718 files on your hard drive. This brings up the third item...hard drive space. You're right if you believe you'll need plenty of free





Performing a flyby of Mt St Helens (left). Approaching Mt. Ranier (right).



hard drive space. Plan for about 350 Meg of space for a standard installation but at least 750 Meg for a complete installation. (You can choose to run PNW partially from the CD-ROM with the normal installation. However, the textures will load faster with the full installation since it doesn't use the CD-ROM. Also, you'll avoid the risk of damaging the CD-ROM.)

Fortunately, PNW includes a fully automated install that installs the scenery and textures wherever you tell it. It then changes the world.vis file for you. The documentation mentions the scenery works the best with FS98 and Combat Flight Simulator (but will work, albeit not as well, with FS95 and FS5.1). All the airports and runways are easy to find because the scenery is installed into the "FS6.0 and before" section of FS98. Simply click the **World | Go to | Airport** command.

Then if you should ever need to regain the hard drive space, you can choose to uninstall the scenery from the main menu of the program.

Package contents

PNW includes several nice extras to make the package even more complete. They include:

- ✦ 1 full color Seattle Terminal Chart
- ✦ 1 full color Seattle Sectional chart
- ✦ 1 full color IFR enroute low altitude chart
- ✦ 120 instrument approach charts
- ✦ A well-written manual
- ✦ 6 picture postcards of the PNW scenery



Situation files

PNW includes several flights for you to try. A few are especially challenging. For example, nighttime ILS approach in 3 miles of visibility at night on the ILS toward Vancouver. The impressive lights of the city suddenly appear in this situation as you got closer to the runway.



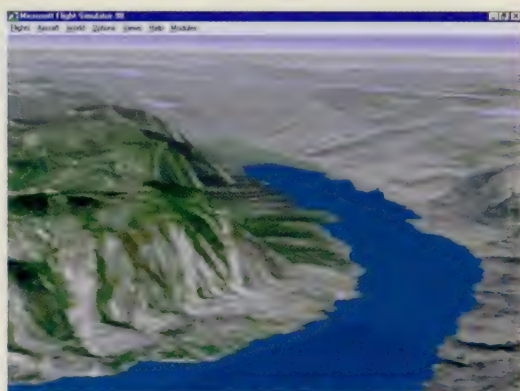
One flight in PNW is a nighttime ILS approach in three miles of visibility on the ILS toward Vancouver. After flying through the fog, the lights of the city suddenly appear.



Another flight is an over the outer-marker on approach to Portland 28R ILS.

Product Reviews

The other flights (situations) included a LearJet flight out of Yakima heading for Mt. Rainier was a pleasant diversion. Another excellent situation is the "Misty Morning Over Lake Chelan" flight.



Scene from the "Misty Morning Over Lake Chelan" flight

Final thoughts

I have only very minor complaints and concerns with PNW. You definitely need a fast computer to really enjoy it. PC Aviator recommends a PII-233 with a 3D-accelerator card. They also recommend setting visibility at 10NM in the city sceneries and 15NM in country sceneries if your computer has less power.

The lack of detail at the airports may be a concern for some dedicated simmers. The terminals at PDX, SEA and YVR have their own textures but the airports seem to be missing something. Gates or other static scenery would be a welcome addition.

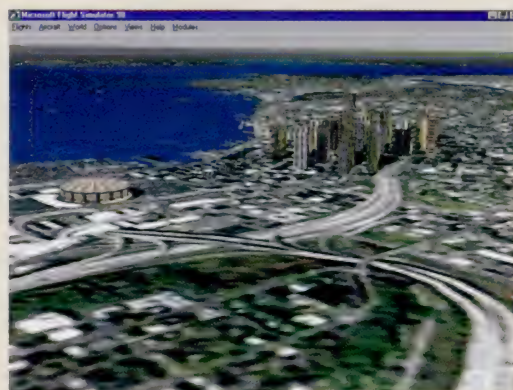


A very minor complaint is the lack of detail at airports.

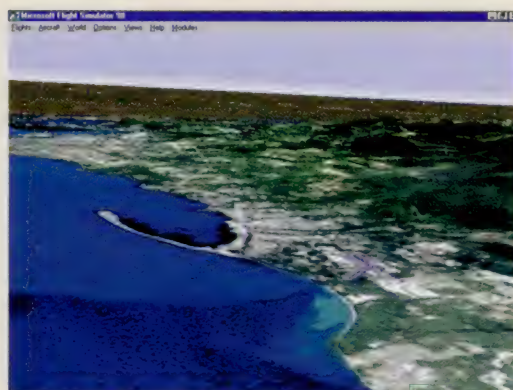
However, that is minor considering what you're getting in this package. If you have enough available hard drive space, consider PNW. If you don't have enough hard drive space, delete some unused files or buy a larger hard drive. You'll discover that there isn't a scenery package

for any region available quite like PNW. If you buy PNW, check the PC Aviator website for support, FAQs and other information.

As I mentioned, Pacific Northwest is the first title in the MegaScenery USA 98 series so I'm anxious for the other titles. You can get more information about MegaScenery USA 98 from the PC Aviator web site (<http://www.pcaviator.com.au>). PC Aviator is located in Melbourne, Australia.



Approaching downtown Seattle. The Seattle Kingdome is on the left.



Flying around Boeing Field King County International near Seattle.

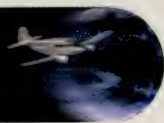
For More Information

PC Aviator Pty Ltd
Suite 6
219 Balaclava Road
North Caulfield VIC 3161
Australia

www.pcaviator.com.au

Red Baron 3-D

Brian Howard



Many years ago (1980), an aviation combat game arrived in arcades across the land called *Red Baron*. This game was good, and virtual aces rejoiced throughout the land. Now, many years later, it has a worthy successor: **Red Baron 3-D**. You may remember the original *Red Baron*, with its vector-based, green-on-black graphics, or the revamped *Red Baron II*. But if the title and theme weren't the same, you might not recognize *Red Baron 3-D* as the direct descendant.

I know that many gamers have become cynical about sequels. After all, only a few publishers haven't tried to cash in on an old arcade favorite by adding a few polygons, a fresh coat of pixilated paint and slapping the "3-D" tag onto the package.

And usually these are poor representations of both the original game's glory and the technical progress since that game. I tell you right now that *Red Baron 3-D* is so much more than a tacky update of a classic game. In fact, it's more than a very good update. By all criteria, *Red Baron 3-D* (RB3D) should be considered an original game, holding to the same theme as the original.

This will whet your appetite:

- ✈ Four variations of multiplayer play
- ✈ Up to 64 players competing on the Internet
- ✈ Textures that enhance smoke, fog, sun glare, clouds, explosions, AA guns, buildings, trees, bushes, aircraft and more
- ✈ Accurately refined flight models, including gyroscopic and torque effects
- ✈ Customizable flight models allow you to weigh realism against difficulty
- ✈ Combat damage modeling affects aircraft handling
- ✈ 40 historical aircraft—22 are player-flyable; 18 are controlled by AI only
- ✈ Fly Now, Mission and Campaign modes
- ✈ Detailed historical information is recreated in the simulation

- ✈ Customize your planes with paint schemes and logos
- ✈ A mission builder

Features

This World War One air combat simulation features 40,000 square miles of terrain, based on aerial reconnaissance photographs, Gorrell maps, and Hammand's large-scale map of the Western Front (circa 1919). Forty airplanes, 22 of which can be flown by players, are modeled to the exact specifications of the original aircraft. You may also customize your aircraft with paint, insignias and logos. It also features free Internet multiplayer action, either through the World Opponent Network (www.won.net) or individual servers. The wealth of configuration options allows anyone to customize *Red Baron 3-D* to his computer performance and skill level. Programmed with historical accuracy, this game allows you to face historical aces flying the same aircraft available in the Great War.

All this action doesn't come cheaply. For the best experience, you'll need to have 300 megabytes of free space on your hard drive and a joystick. When I first loaded RB3D, I tried to fly with the keyboard alone. It can be done, but it won't be easy. If you don't already have one, this game is a good reason to invest in a quality (not necessarily expensive) joystick. When you're beginning, be sure to look through the manual. It is very good, both readable and useful. Its series of tutorials will introduce you to the RB3D controls and environment. Beyond teaching the game's basics, an additional 120 pages focuses on the history of WWI and the development of air combat, from pilots arming themselves with revolvers, bricks and bottles, to the highly deadly machines flown by the last aces. It also introduces flight maneuvers, formations and medals, replete with vintage photographs. In addition to creating a context for the battles and campaigns in the game, the manual's historical overview also offers much interesting trivia. For example, did you know that RFC pilot L.A. Strange was the first to carry a machine gun aloft?



Product Reviews

(Unfortunately, the weight of the gun kept his plane below 3,500 feet, well below his German adversaries.)

Before you begin flying in earnest, you'll want to explore the game preferences, where you determine the realism, and thus also the difficulty. For quick-fixers, RB3D offers an all-purpose slider to make quick changes. Beyond this, you may individually adjust many parameters, such as whether you will have to compensate for the torque effects common to aircraft of this era, your vulnerability, the skill of the computer-generated pilots, presence of sun glare and the realism of the overall flight model. And this is just a small sampling. Red Baron 3-D offers excellent control over your playing environment, whether you want to be an arcade shooter or a simulator ace. The wealth of options is also provided for the game's graphics, sound and even the default Fly Now situation.

Gameplay

Like many games today, and almost all the successful ones, RB3D offers single player and multiplayer features. The single player game is more involved, offering a variety of campaigns and missions, allowing you to hone your skills and experiment with maneuvers. You can even take a rookie pilot from induction and raise him through the ranks to become a certified ace, if you live that long. The multiplayer arenas are where you'll have to prove your skill at acquiring enemy targets, disposing of them and regrouping for another attack, before anyone locks onto your tail.

Single player

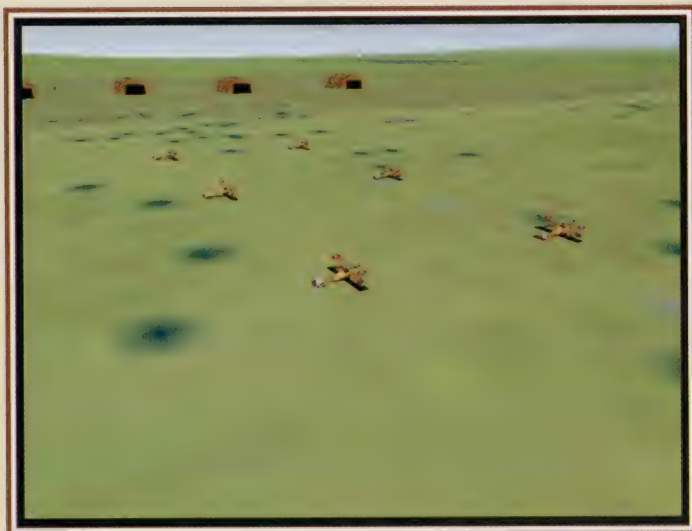
Initially, you'll want to spend time in the single-player game to become familiar with the controls and idiosyncrasies of pioneering aircraft. But once you get the basics down, you'll realize that the single-player game is much more than just a proving ground for the multiplayer matches.

To dive right in, the Fly Now option places you in the air with new targets appearing at regular intervals. If you want to test the controls, practice your aerobatics or score some quick kills, this is the place to do it.

Missions

When you think you're ready to put all your flying, navigating and combat skills together, the Single Mission option is waiting. The mission briefing includes your navigation chart (which is strapped to your knee for reference anytime during the flight), the flight formation and a reconnaissance photo of the area. Twenty individual





missions, plus eight tutorials, are available. The random elements of the AI make sure that you won't get bored with these by giving you a different look at your opponent(s) each time you fly them.

The built-in mission editor lets you create your own original missions. These may adhere to the same historical guidelines as the rest of the game or you may take liberties that were not available in the early twentieth century.

After you have a few missions under your belt, prepare to enter a full-scale campaign. You may enlist with the British, German, French or American forces. From the main Campaign screen, you can create a pilot or resume where you left off earlier. This is also the place to check your virtual squadron's progress or to learn about the historical squadron you are reliving. The intelligence reports include authentic short films of enemy operations, as well as detailed information on historical squadrons and aces. You may select any point in time to enter the war and perform each mission in the campaign sequentially or just those that appeal to you. RB3D's autopilot and time compression features are especially handy for traversing long stretches of open sky during missions, such as when on your way to a target site or making the run home after wiping out a base deep in enemy territory. Alternatively, you may fly the entire course of each mission for a more realistic simulation (after all, the real pilots couldn't press a button and miraculously return home twice as quickly).

Realistic event dates

Both the single missions and the campaigns accurately reflect the history of World War One. This means you'll encounter the same pilots, technology and events as the real pilots did. For example, US servicemen entering the war before the US joined in 1918 will fly as members of the French Lafayette Escadrille. All the available units, officer rankings, affiliated countries, squadrons, planes, missions and even your wingmen will correspond to the date that you choose to enter the war. You'll be able to see historical figures (imagine having Eddie Rickenbacker as your wingman) make kills, advance in rank and die on the historically accurate dates.

The Red Baron 3-D single-player game deserves high marks for presentation, gameplay and the depth of the experience it simulates. As an action combat game, RB3D is challenging and fun. I always want to circle around for one more kill. As a simulation, the wealth of options and details make RB3D a threatening rival to any other available. The research and production values behind the game ensure that the player will have an immersive and educational experience. The 140 pages of historical overview in the manual are beautifully supplemented by

the information offered in the game itself, which includes pilot and ace dossiers, previews of the all aircraft, ground forces and missions and authentic intelligence reports.

Multiplayer

But wait—there's more! In the same package you also receive an extraordinary Red Baron 3-D multiplayer game. This is one of the easiest to setup multiplayer games I have yet played. You can dogfight opponents over a local network or the Internet (on either the World Opponent Network, www.won.net, or individual (rogue) servers). Arranging a game couldn't be simpler: launch the multiplayer RB3D, click **Connect** if you're not already online, select your match and fly. The multiplayer game has its own preference settings. This is very useful, allowing you to have the graphic detail turned all the way up during single-player games and to have it reduced to lessen the bandwidth load during Internet play, without having to adjust the settings each time.

One of the most useful features is that you can sort the multiplayer game servers by the quality of the connection, the difficulty level set on the server and the style of game play. Make your selections and only the servers matching your choices appear in the selection window.

RB3D offers three variations of multiplayer action: Melee, Team Melee and Get the Baron. Selecting a Melee competition puts you into a real furball dogfight, a free for all with every pilot out to earn the most kills against everyone who crosses his gunsights. In the Team Melee, you choose to fly for either the Germans or the Allies. This can be one of the most realistic of the multiplayer matches, allowing the server master to limit players to historically accurate aircraft, according to the date set in the game. The multiplayer chat features also allow players to

communicate and coordinate their missions. Get the Baron is an aviation tag game, in which the *It* character is known as *The Baron*. The first player to score a kill becomes *The Baron*, who then scores points by shooting down other pilots. The first player to shoot down *The Baron* then becomes *The Baron* and can begin collecting points. A game of Get the Baron can have up to eight *Barons*, each distinguished by a unique, solid color, instead of the plane's normal camouflage pattern.

Although you may have some settings reduced to compensate for Internet lag time (latency), the multiplayer RB3D behaves pretty much the same as the single player version, including the wealth of diverse and realistic effects, such as your engine overheating and catching fire, or seeing your wings torn by bullets when you let an opponent drop in behind you. The variety of view controls allows you an almost unlimited panorama, which is essential for tracking your enemies. If you lose track of someone, target buttons give you a quick look at either friends or enemies. The simulation clock also elicits night and day flying, which each has its own advantages and difficulties.

Conclusion

If you like aviation sims, air combat games or want to learn more about the pioneering days of aerial warfare, Red Baron 3-D is unrivaled. You must try to get this game. Even many of you who are hooked on jets and can't imagine flying at less than mach speed will enjoy experimenting with fabric, wood and metal aircraft. The gameplay, which is the most important component, is excellent in both single and multiplayer. The game's depth is pleasantly startling, since so many games don't offer anything more than the publishers feel is absolutely necessary. In this case, the realism, the obvious effort involved and the depth of the experience combine with the game play and the easy-to-navigate menu system to create a simulation that is entertaining, educational and indeed captivating. I encourage everyone to check this out—and watch your tail!

Free Upgrade!

Owners of Red Baron II can upgrade to Red Baron 3-D free of charge. Simply send the publisher your Red Baron 3-D receipt and Red Baron II CD for a refund or download the upgrade from the Internet at:

www.won.net

or

www.redbaronplayers.com

For More Information

Dynamix
600 Millrace Drive
Eugene, OR 97403

(541) 343-0772 or (541) 344-1754 (fx)
www.redbaron3d.com
www.dynamix.com

Comm1

Jim Rhoads

Communication is a priceless commodity and a skill that is acquired through attentiveness, consideration, discipline and much practice. Many of us realize that many problems we face can be directly traced to a lack of quality communication. Many people make a good living teaching other people how to communicate and how to say the proper things at the proper time, in a tone and manner that gets positive results. Many times what you say isn't as important as how you say it. Communication is both a skill and an art.

So it is with aviation. Communication between aviators has an order and a method that dictates the response we will receive according to the situation. In addition, most aviators will agree that good communication skills are acquired over time. I think one of the most difficult things I faced when learning to fly (and after) was the fear of facing class airspace controllers. As I acquired more time in the cockpit, I understood that it really is an expected request from the pilot side and an expected response from ATC. We both are anticipating an expected verbal response. And let me tell you, the way you say it and when you say it is everything. For example, which sounds better to you?

Grand Rapids Approach Cherokee 140HC departing Kalamazoo airspace direct to GRR 3500' with information Echo.

On the other hand, try it like this after waiting until you have busted the 15-mile outer ring:

Yo, Grand Rapids Approach 140HC is inside your airspace and gonna land runway 8R. Lookin' good out here today, huh?

Get the picture? It is not hard to figure out who is going to get the better treatment.

Comm1

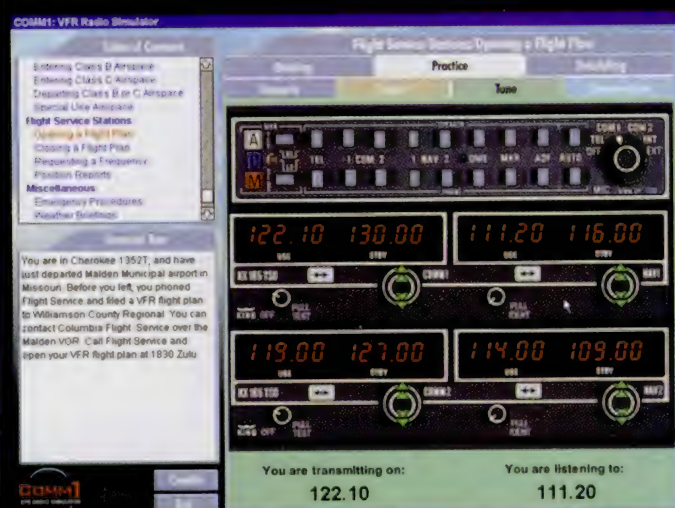
With that said, I would like to introduce you to a new software package appropriately named **Comm1**, produced and published by E-publishing Group. Comm1 addresses the entire realm of VFR aviation communication based on FAA and AIM approved radio phraseology.

This product intrigued me because I had never seen a package that focused specifically on developing positive aviation communication skills. And since communication

is probably one of the most important aspects of flying, it is hard to believe that the area of pilot communication training has been neglected for so long.

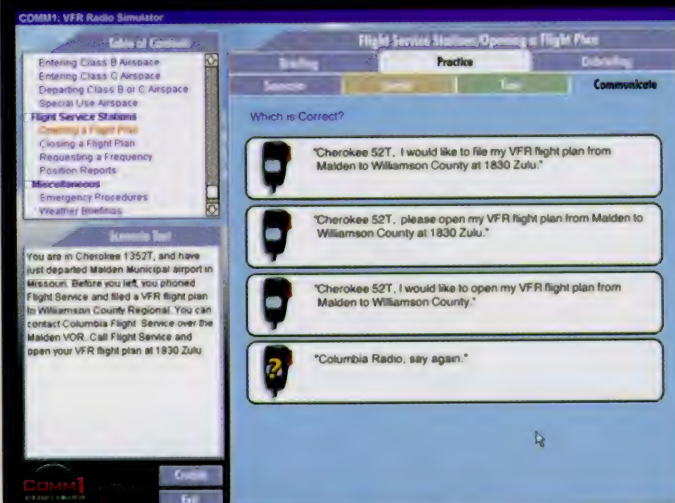
Upon opening the box, I was a bit surprised to see only a four-page users guide and a CD, but I quickly found that the users guide really is not necessary. Comm1 is a truly interactive training program.

You will need a microphone and a set of speakers; do yourself a favor and pickup a set of computer headphones with a built-in microphone.



(Above) A click of the mouse tunes the COMM1 photorealistic interactive radio stack.

(Below) Hearing is believing when you hone your radio skills with FAA-reviewed COMM1 VFR Radio Simulator.



Your Turn

Comm1 thoroughly explains the proper method of communicating through visual and audio examples of various scenarios. Then it is your turn. Comm1 requires you to verbally respond to the request or instruction given by ATC or from many of the other VFR situations that are presented. However, it is not quite that simplistic.

Here is an example:

You are sitting in Cherokee 1352T in front of the Davis Avionics repair facility and are ready to depart for Charlottesville. You have already listened for ATIS and have information GOLF. Tune in Hagerstown "Ground" and initiate the communication.

Before you had gotten to this point of the program, you would have already been briefed and given an example of the proper procedure. Now, click the *Locate* tab of the lesson. Here you will find sources to locate the correct frequency for Hagerstown ground from the Airport Facility Directory, Sectional Chart, or the AOPA airport directory guide.

Now you will be required to actually tune the radio in to the correct frequency on a lovely King KX165 radio stack to Hagerstown "Ground." Now click on the *Communicate* tab. If you did not select the proper frequency, you will be gently chastised and given the correct frequency to select.

Once the correct frequency has been selected, you will be given a choice of several different communication options. "Key" the on-screen microphone with a left mouse click and speak the selected phrase that you have chosen from the available dialog boxes. During this phase you will hear background chatter of other airplanes speaking, and if you key the mic while someone else is talking, the narrator will tell you that you stepped on someone else's transmission and to try again.

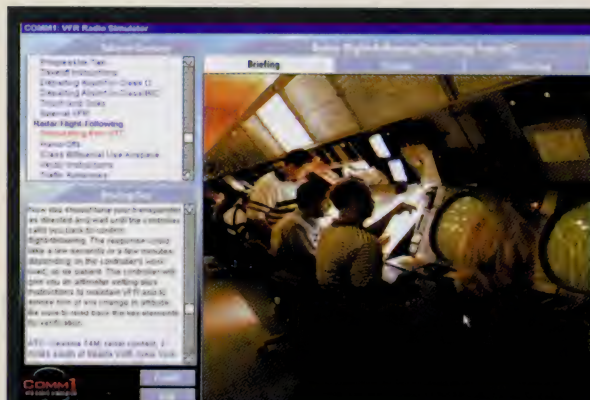
If you select and announce the correct intentions, your printer will start kicking out 100-dollar bills.

Well not really, but you will be congratulated and referred to the next tab, *Debrief*.

Lesson Learned

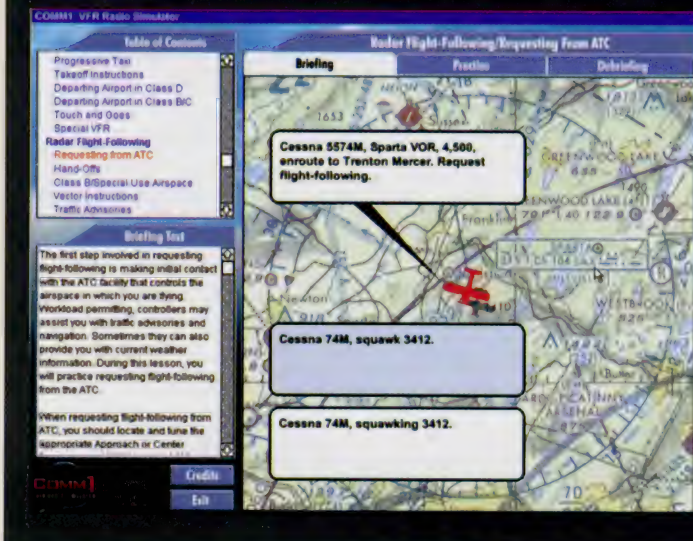
During the *Debrief*, the narrator will review what was learned in the lesson, and then you will have a chance to compare your performance and recording to that of a professional.

I might add that during the entire lesson scenario, the CD-ROM is accessing many images and charts.



(Above) Hear "live" air traffic controllers working your aircraft and other traffic in real-time settings through all types of airspace.

(Below) Detailed graphics depict your aircraft and aid you in each lesson and scenario.



In fact, it is almost as if you are participating in an interactive movie. Comm1 rates high in my book and is absolutely worth the money if you are training in real aircraft, based on the money you will save compared to renting aircraft while learning, plus rewarding you with much more confidence as you tame the skies.

So, where do I see this product fitting into the flight simulation realm? With the new technology that is rapidly advancing in the multi-player communications sector of flight simulation, I see Comm1 as a viable tool for the many virtual airlines and multi-player online ATC programs that

are emerging on the Net. All you users of Squawk Box and other hosts of online sessions can improve your communication skills as well as cut down on keystrokes and sound like you know what you are doing.

Summary

Comm1 is an excellent communication-training package geared for anyone who wants to learn proper aviation phraseology and the correct procedures for all VFR flight. It is highly interactive and very easy to use, with many audiovisual briefings and practice exercises to expand your knowledge and add clarity to you speech. This is one top-notch package, a total ground school of communications (see *Contents of Comm1* below). Look for an IFR version in the spring of 1999.

For More Information

e-publishing group
113 East Church Street
Frederick, MD 21701
Phone: (888) 333-2855
Fax: (301) 695-5620
Internet: <http://www.e-publishing.com/comm1/frame.htm>
Intro price: \$99.95

Contents of Comm1

Below is a sample of the contents of Comm1. Note this isn't the complete contents but will give you an idea of what Comm1 has to offer.

Before you begin

- Speech Quality
- Numbers and Figures
- Putting it All Together
- Phonetic Alphabet
- Aircraft Call Signs

Locating Frequencies

- Recourses
- Multicom
- ATIS
- Tower
- Approach/Departure Control
- ARTCC
- CTAF
- Unicom
- AWOS/ASOS
- Ground Control
- Flight Service Stations

Using the Radio

- Tuning the Radio
- Transmission Techniques
- Receiving Techniques
- Using the Microphone

Non-Towered Airports

- Radio Checks/Airport Advisories
- AWOS/ASOS
- Taking Off
- Pattern Announcements
- Go-arounds
- Over-flying the Airport
- Taxi Announcements
- Back-Taxiing
- Clear of Runway
- Entering on a 45
- Plane to Plane Communications

Towered Airports

- ATIS
- Approaching Airport in Class D

- Approaching Airport in Class B
- Approaching Airport in Class C
- Approaching Airport in Class TRSA
- Landing Instructions
- Taxi to Ramp
- Clearance Delivery (Class B and C)
- Taxi for Takeoff
- Progressive Taxi
- Takeoff Instructions
- Departing Airport in Class D
- Departing Airport in Class B/C
- Touch and Goes
- Special VFR

Radar Flight Following

- Requesting from ATC
- Class B/Special Use Airspace
- Vector Instructions
- Traffic Advisories
- Temporary Frequency Changes
- Radar Service Termination
- Hand-offs
- Altitude Changes

Airspace Issues

- Entering Class B Airspace
- Entering Class C Airspace
- Departing Class B/C Airspace
- Special Use Airspace

Flight Service Stations

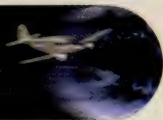
- Opening a Flight Plan
- Requesting a Frequency
- Closing a Flight Plan
- Position Reports

Miscellaneous

- Emergency Procedures
- Weather Requests
- Pilot Reports
- Air to Air Communications

The Intensor

Adam Howe



I am sure a lot of you are thinking this chair does not look all that comfortable and probably hurts your back, or something like that. Actually, the chair is quite comfortable, and I

have even considered using the chair on a day-to-day basis (my colleagues would probably not care for that!).

Sound for computers have come along way in the past few years, from the cheap \$10.00 speakers you plug into your factory sound card to the top-of-the-line sound cards pushing sound to expensive, multi-media speaker systems and home entertainment consoles. Each of these has its high and low points. BSG Laboratories, Inc. has introduced a new way to bring sound to your games: the Intensor.

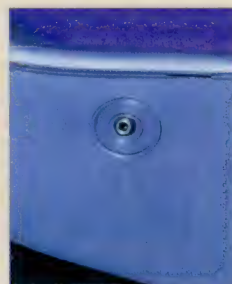


The Intensor is a chair that plugs into your computer's sound card. The chair contains four visible speakers built in, plus a speaker or set of speakers set in the back of the chair, so you can "feel" the sound that can kick up to 107 dB. What surprised me was the ease of assembly, which required only a Phillips screw driver and 3/8" socket with ratchet extension (and about 15-20 minutes of time). It took a few attempts to get the arm rest mounted to the bottom of the chair, but once that was accomplished, the rest fit right into place.

The Intensor comes with a cord that plugs into your sound card with the standard headphone plug (1/8" mini plug), thus making it compatible with all sound cards I've seen. The cord then plugs into an audio-input console (Gaming Console), which is like a pre-amplifier. The console then has an attached custom plug that plugs into the front of the chair. If this does not supply you with enough sound, you can also hook up the subwoofer that can sit under the Gaming Console. A simple set of RCA cables supplies the audio signal from the Gaming Console to the 40-watt subwoofer. From here, all you have to do is plug in the Gaming Console and the subwoofer, turn on your computer, the Gaming Console and the subwoofer, and you are ready to go.

The chair also has a volume knob, which will help keep your spouse sleeping in the next room while you are "balancing the check book" on your computer. There is also a Tone control knob, or "Tactile Intensity" as the brochure states, that will help adjust the vibration of the speaker(s) in the seat, as well as controls on the subwoofer to adjust the rumbling bass. For those of you who do not dare turn up the volume (like myself), you can also plug headphones into the side of the chair and control the volume through the chair's volume knob (see illustration on the right). The headphones will stop the sound from reaching the four visible speakers, but will still leave the speaker(s) in the seat to rumble you to the next level. The Intensor is similar to a standard office chair, in that it swivels and tilts pretty far back for maximum comfort.

The chair is available in separate pieces. You can get the chair itself, which will sit on top of an existing chair or sofa; the chair-base accessory, to hold the chair itself; and the subwoofer. If you are thinking of getting the chair, get the whole package! The chair unit with the Gaming Console has a price tag of \$299.99. The Chair base with arm rests



runs \$129.99 and the subwoofer carries the price of \$169.99. To get the whole package, you are looking at \$599.97 for the whole deal.

I was fortunate enough to take the chair home and try it with my Nintendo 64 Entertainment System, to the surprise of my lovely wife! Being compatible with any form entertainment system is a real bonus for this unique add-on. You can even hook this up to your CD player, DVD, DSS, Playstation, Sega, VCR or your TV, if you have the right connection.

As I have stated, I really enjoy this chair. The only feature of the chair that I would redesign is the cord that plugs into the chair. The connection for the sound runs from the Gaming Console to the front of the chair between your legs. The connection seems OK, but could be a bit sturdier with a locking feature, because it can be knocked out. Also, since the connection is right in front of you, you have to step over it to get into the chair. I would have placed the cord perhaps on the underside of the chair or even on the side. The big picture says this is a great device to enhance any gamers experience, especially those in the Flight Simulator community. Those of you anticipating the release of the Combat Flight Simulator from Microsoft (as I am) will really appreciate the effects the chair delivers on each squeeze of the trigger and firing of a missile (and the crashing as well!).



If you are looking to take your gaming to the next level, then it is time you take a serious look at the Intensor from GSB Laboratories, Inc.

For More Information

BSG Laboratories, Inc.
638 Harisson Avenue
Panama City, FL 32401

Phone: (800) BGS-LABS
Fax: (850) 873-8990
Internet: <http://www.intensor.com>

Don't forget the Full Throttle web site

Don't forget to check out the Full Throttle web site (www.ftmagazine.com). It's the perfect place to start if you're looking for information on flight simulation.

At the Full Throttle web site you'll find:

- ✈ Online "how to" guides
- ✈ Links (both aviation and flight simulation)
- ✈ Visit the Aircraft Image Archive that is dedicated to actual aircraft both in flight and awaiting takeoff
- ✈ Interview with flight sim legend Laemming Wheeler
- ✈ Details on Combat Flight Simulator
- ✈ Details on Pro Pilot '99
- ✈ Ordering previous issues of Full Throttle

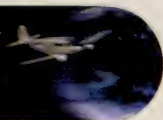
And much more!



www.ftmagazine.com

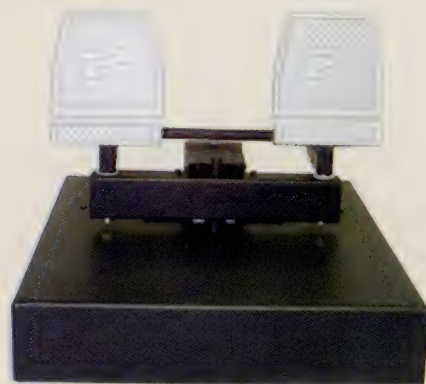
Precision Flight Controls Cirrus Yoke and Rudder Pedals

Adam Howe

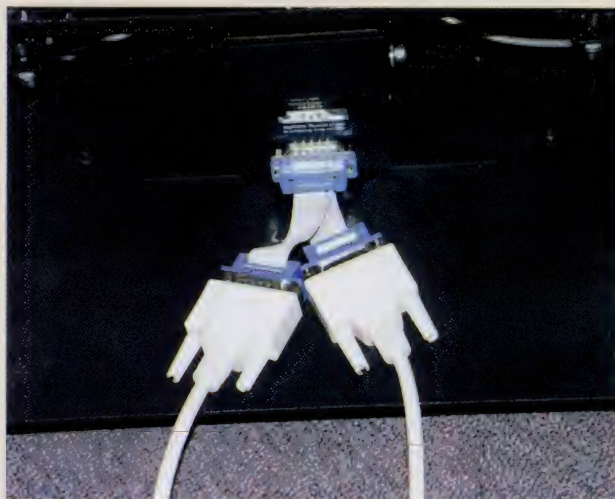


Over the past few years, I have fancied myself a pretty avid Flight Simmer in that I knew a little bit of every aspect of how the simulator worked. I could design scenery, edit a panel or sound configuration file, and even get planes and scenery from the Internet running in FS. I could compete with the best in all aspects of Flight Sim, except one: flying. Sure, I can take off and occasionally land on the runway, but on the takeoffs I often pull up too sharply into a stall or I land on the apron or grass of the airport. I had never given much thought as to why this was and just assumed it was because I was not a pilot. But I was wrong! It was my joystick!

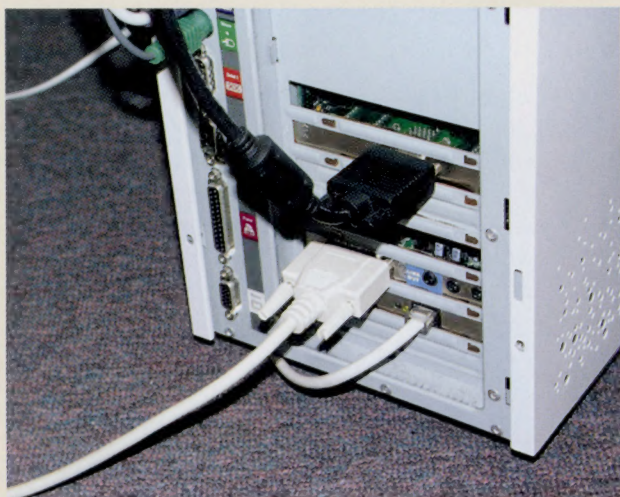
I have used quite a few different control devices for FS, including standard joysticks, flight yokes and even the mouse. Usually the lack of consistency in the controls made the flying harder than it actually is. Recently I was asked to review the **Cirrus Yoke and Rudder Pedals** from Precision Flight Controls. Precision Flight Controls has created a realistic flight yoke, both in appearance and handling. I had never given much thought to the rudder in FS before, and now I feel that may be why I couldn't land the plane.



Pulling the yoke and pedals from the box and seeing only two cables, I thought to myself, "Something must be missing. Installation could not be this easy!" I was wrong—installation was a snap. The back of the rudder pedals unit had a "Y" adapter plugged in to it where you plug in both cables that came with the hardware.



One cable plugged into the back of the flight yoke, and the other into the game port on my sound card.



From here it was just a matter of adding the yoke to the computer through the Game Controls option in the Windows Control Panel. I will admit that I had some difficulty on this step, only because I already had a joystick installed. I called the number listed in the manual and briefly told them the problem and in less than a minute, I had a technical support person on the phone solving my slight problem. I removed the existing joystick and added a "4-button flight yoke w/ throttle." This solved the problem and displayed the "OK" in the Status column. After calibrating the movement of the yoke, throttle and pedals, I was ready to give them a run in FS98.

Taking off effortlessly and consistently in FS was something that I was not used to. The yoke gave the feel of actually being in control of the aircraft. The built-in throttle control is very nice, especially since it is so close to the yoke. This allows for a quick adjustment and your hands can quickly get back on the yoke. A lot of throttle knobs can be erratic in FS. You slide the wheel or push the throttle lever just a bit and the throttle jumps up high or does not move. This makes precision flight difficult. With the throttle on the Precision Flight Control's yoke console, the adjustment was as you would expect it should be—precise. A slight push of the throttle knob would slightly increase the throttle.

Pricing for the units reviewed are a bit on the high end, but you are getting top-of-the-line equipment that will be around and working for many years to come. The yoke console I reviewed currently runs \$495.00 and the pedals come in at \$395.00. Check out their Website and place your orders on-line.

The only downside to the Precision Flight Controls unit I used was that it seemed to slide off the table when I would pull back hard, as when attempting a loop in a 747. It has rubber feet on the bottom, but they didn't grab my desk well. I was trying to think of a way for them to improve on it, like covering the entire bottom with a rubber mat, but they were one step ahead of me. As I glanced through the

rest of the installation manual (16 pages), I noticed some handy accessories. One is the Cirrus Desk Mount, which secures the yoke for \$45.00. The rudder pedals unit, on the other hand, has Velcro-type strips on the bottom that prevent slipping on a rough surface like a rug. (Though the Velcro strips can also make it difficult to peel the unit off of the floor after you have been applying pressure to the pedals for a few hours.)



I enjoyed reviewing the Precision Flight Controls yoke and pedals. I would use it on all my flight simming and suggest that you consider doing the same.

For More Information

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11500 Sunrise Gold Circle, Suite D
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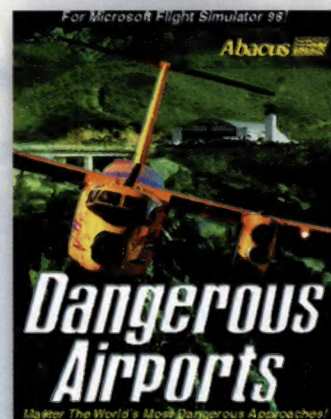
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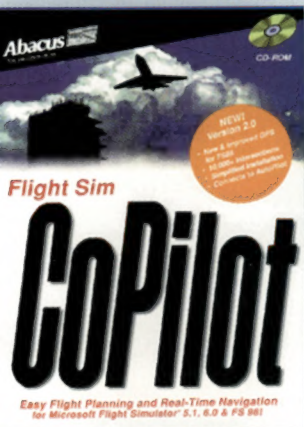
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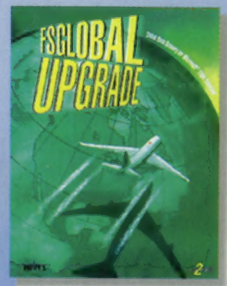
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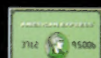
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